

# Home Computing WEEKLY

An Argus Specialist Publication

July 12-18, 1983

No. 19

38p

## INSIDE

Behind the scenes at English Software

Great games to type in for:  
TI-99 / 4A,  
Spectrum,  
Dragon, ZX81

Software reviews for:  
Lynx, TI-99 / 4A,  
VIC-20, BBC,  
Atari, Oric,  
Dragon,  
Jupiter Ace,  
Spectrum

Create more characters with your VIC-20  
Drawing with the Oric

Best sellers: charts for VIC-20, ZX81, Spectrum, Dragon

## CRASH FAKED IN SPECTRUM RAID

COMPUTERS have been fished out of the Thames — days after armed raiders got away with a £390,000 haul.

They staged a car crash to lure the security guard from a London warehouse.

He was inside the TNT warehouse, on the Cranford Lane Industrial Estate, Hornsey, chatting to the estate manager when they heard a crash outside.

A car with a girl at the wheel and a main passenger had crashed into dustbins.

The two men went to their aid — and found themselves facing a shotgun and a handgun held by two other raiders who had been waiting nearby.

One of them said: "Blow them away...it will save time later."

In fact no shots were fired and, as the car drove off at high speed, the guard and the manager were forced back into the warehouse.

They were made to get into the back of a truck which was then reversed against a wall, trapping them.

Meanwhile the three robbers loaded up two other TNT trucks with computers — mostly 48K Spectrums in boxes of 10, plus ZX81s and some software. The trucks, both orange coloured Ford Cargos, were later found abandoned.

The two trapped men shouted and banged on the sides of the truck until they were heard by passers-by and released.

The haul, worth £390,000, belongs to Prism, Sinclair's sole distributor in this country. It was

*Continued on page 3*



**New Ataris — see inside**

An amazing collection of exciting games for VIC20 and ZX Spectrum —

# Spectrum Games

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The normal character PRINT grids on the other hand will allow you to be specific about PRINT AT, TAB, PRINT OVER, SCREENs and INK / PAPER in direct co-ordination with PLOT... you see every page is printed on high quality tracing paper... ideal to overlay on to illustrations and 'copy' or co-ordinate.

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There's TEN OVERLAYS to a pack — so you can program with impunity! And they fit perfectly onto your standard ZX SPECTRUM KEYBOARD. Each OVERLAY is printed with the cursor movement key directions and there's room for program name etc.



# A SPECTRUM CONSOLE THAT EVERYONE CAN AFFORD!

For the cost of a 'games' cassette you can have a truly professional console for your SPECTRUM!

We've cut costs (not cut quality) by designing a self-assembly method using relatively inexpensive materials like strong corrugated board.

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# "WHERE CAN I GET THEM?"

You can see and buy most of our products at:

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- Boots (selected branches)
- Buffer Micro (Streatham 01-769 2887)
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- Dennys Bookshops (London EC1 01-253 5421)
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- Telford Electronics & Computing (Shifnal 0952 460008)
- Georges Bookshop (Bristol 0272 276602)
- Microtech Systems (Gillingham Kent 0634 571321)
- Northampton Home Computer Centre 0604 22539
- Phillip Copley Hi Fi (Ossett W. Yorks 0924 272545)
- Darlington Computer Shop (Darlington 0325 487478)
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- Hobbyhorse (Lincoln 0522 35227)
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Post today to Print'n'Plotter Products, 19 Borough High Street, London SE1 9SE or phone: 01-403 6644 (General) or 660 7231 (Credit Card Sales).

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Continued from front page  
in the warehouse awaiting  
despatch to retailers throughout  
the country.

Prism's deputy managing  
director Terry Brown said: "It  
means there won't be as many  
retailers holding stocks as there  
could be.

"We have got to try and get  
extra stocks so we won't build up  
a lead time. My advice to  
customers is to shop around or go  
back to the store later."

He said: "They loaded up  
the lorries very inefficiently. They  
left at least 2,000 computers  
behind when they could have  
taken everything that was in the  
warehouse."

Prism, which was insured  
for the loss, distributes to most  
UK retailers, excluding a handful  
of large chains, like W.H. Smith,  
Greens and John Menzies, which  
are supplied direct by Sinclair  
Research.

Five days later £1,730 worth  
of computers were found  
submerged in the Thames in  
Buckinghamshire by two boys  
out fishing.

There were 13 Spectrums, a  
ZX81 and a single power pack in  
two plastic bags. All were ruined.

Police are checking to see if  
there is any connection and an of-  
ficer said: "Things are develop-  
ing."

## The Oric collection

Home Computing Weekly con-  
tributor Vince Apps has just  
brought out a collection of pro-  
grams to keep Oric owners busy.

The Oric-1 Program Book  
contains 50 program listings  
which, according to the  
publishers, will allow those  
dedicated enough to type them all  
in to run an obstacle course, pro-  
tect six cities from missile attack,  
save a maiden from a dark  
knight, draw graphs, weave  
webs, have a firework display,  
peek into the Oric's memory...

The book costs £6.50 direct  
from the publishers.

Phoenix Publishers, 14 Vernon  
Road, Bushey, Herts

# Home Computing WEEKLY

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## Dragon crosses the ocean

The Dragon-32, which was  
launched in the UK only last  
August, is now to be sold across  
the Atlantic.

Dragon Data has just signed  
an agreement with New Orleans-  
based company Tano to market  
the Dragon in the USA, Central  
and South America and the  
Caribbean.

*Dragon Data, Kenfig Industrial  
Estate, Margam, Port Talbot,  
West Glamorgan*

## Cartridge price cuts

The retail price of Thorn EMI  
software cartridges for the  
VIC-20 and Atari 400/800 micros  
can be expected to fall, now that  
Thorn has cut the price it charges  
dealers.

Cuts of £5 per cartridge on  
the trade price will probably  
mean that retail prices will fall to  
under £30.

*Thorn EMI, Upper Saint Mar-  
tin's Lane, London WC2H 9ED*

## LATE NEWS

### Oric joins price cutters

Price of both Oric computers  
have been slashed. The 48K  
model has been cut by £30  
to £139.95, and the 16K  
version returns to its launch  
price of £99.95. Oric said  
that 80,000 Oric-1s have been  
sold in the UK and Europe,  
and a TV campaign was  
starting.

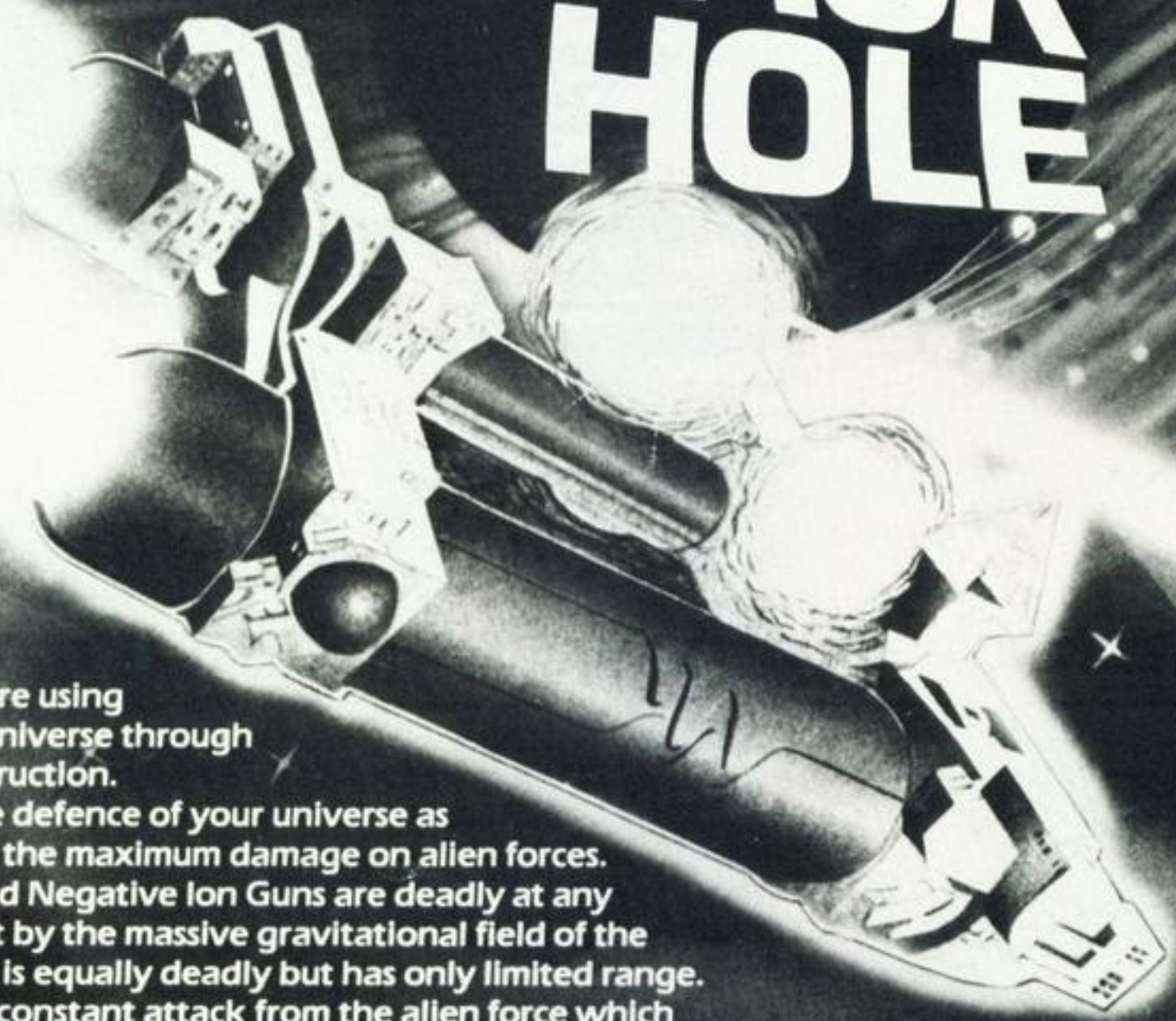
Buyers will also get a £40  
voucher towards the cost of  
the Oric four colour  
printer plotter.



# QUEST FOR ANY SPECTRUM

**SIMPLY THE BEST**

# THE BLACK HOLE



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Also features a special learning mode to help develop your skills.

Embedded in the software is our unique score validator which enables us to introduce a new dimension to computer games. The top ten scorers in each calendar month from April through September will receive a "I'm a Black Hole addict" T-shirt and the chance to compete for prizes to the value of £500 in a championship to be held at the end of the year. We will then publish a list of the top 1000 scorers so you can find out just how good you are.

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**THE TOP 6 SCORERS AT THE END OF JUNE ARE:**

RUSSELL CAPEL	2530	IAN GARLINGE	1847
MRS K. BURNETT	2019	STEVE EDWARDS	1670
DAVID BAXTER	1998	T. SWIFT	1513

## Atari games for other computers

Atari is converting its computer games to run on other micros, starting with cartridges for the TI-99/4A, VIC-20 and Commodore 64.

The first three — Pac Man, Centipede and Defender — will be on sale by the end of the year. More Atari cartridges are also due out soon.

Steve Gerber, 37, Atari's European software development director, who has just arrived at the company's UK base in Slough, explained the new policy.

He said: "It was the Warner Corporation (Atari's owners, who made the final decision. We had been trying to persuade them to do this for some time.

"After all, if you're good at making software, why limit yourself to one machine?"

But would this mean people may choose to buy other computers? Mr Gerber said: "If you found the best software for, say, the VIC, was from Atari, would you not just buy the Atari?"

More adaptations would be coming for the BBC micro, Dragon and the Spectrum, all on tape instead of cartridges.

He said: "We are also about to launch a UK product written by a UK author. This kid just walked in the door with a dynamite game."

The Software Publishing Group was also on the lookout for more UK-written software which would, if suitable, be marketed in America as well as other countries where Ataris are sold.

New software for cartridges due out this year:

- Pole Position, a grand prix motor racing game costing £29.99 and on sale in September



Janice Gash, 25, with the new 800XL home computer from Atari

- RealSports Tennis, in the shops this month, uses the same rules as real tennis — and the players even change ends after games. Price: £19.99

- AtariWriter, a word processing program which, says Atari, offers features usually found in expensive software.

- Games for children based on Walt Disney characters and cartoon films

Atari also showed its new computers and peripherals for the first time in the UK. Prices have not

yet been decided, but they are due here this year.

Details were in last week's Home Computing Weekly, but they included the 16K RAM 600XL and 64K 800XL home computers. They are compatible with existing software and, unlike the present models, have BASIC built in. The top of the range 1450XLD, which is to go on sale here next year, has a built-in dual density, double sided 5¼in disc drive.

Other new products include three printers — the 1020, using ballpoint pens in 4½in paper rolls; the 1025 80-column dot matrix printer; and the 1027 letter quality printer running at a claimed 20 characters per second.

There is also a re-styled 1010 program recorder, 1050 disc drive, a module for the CP/M 2.2 operating system — used for much business software — which also adds 64K of RAM and switchable 40 or 80 column video output, and a box called The Expander with slots for eight expansion cards and two RS-232C and one Centronics interface.

The Expander for the new XL computers only is designed to accept products from other manufacturers.

## Fire bugs cause £10,000 damage

Fire-raisers caused a £10,000 blaze at a leading software and add-on company. And one theory is that they were teenagers angry at not finding any money.

The man who called the emergency services — a quantity surveyor working late in an adjoining office — has been thanked with a bottle of Scotch and the offer of a free meal.

The gift was from Roy Backhouse, managing director of Fuller Micro Systems, based in central Liverpool.

Mr Backhouse said: "Police think it was teenagers looking for money. They smashed the front window to get in at about midnight on Saturday.

"They couldn't find any money — so they set fire to the place. The fire brigade believe they set fire to a wastepaper basket."

Among the property, all insured, which was damaged was software, desks and files. A printer and a terminal were damaged by smoke, but the company's ICL computer was on another floor and not affected.

All 14 people employed by Fuller worked over the weekend to ensure orders were kept up to date.

Mr Backhouse said: "Even though we managed to salvage a lot of test gear it still stinks of smoke.

"It's an absolute pain that anyone could be so senseless. There was a lot of blood, so they must have cut themselves getting in.

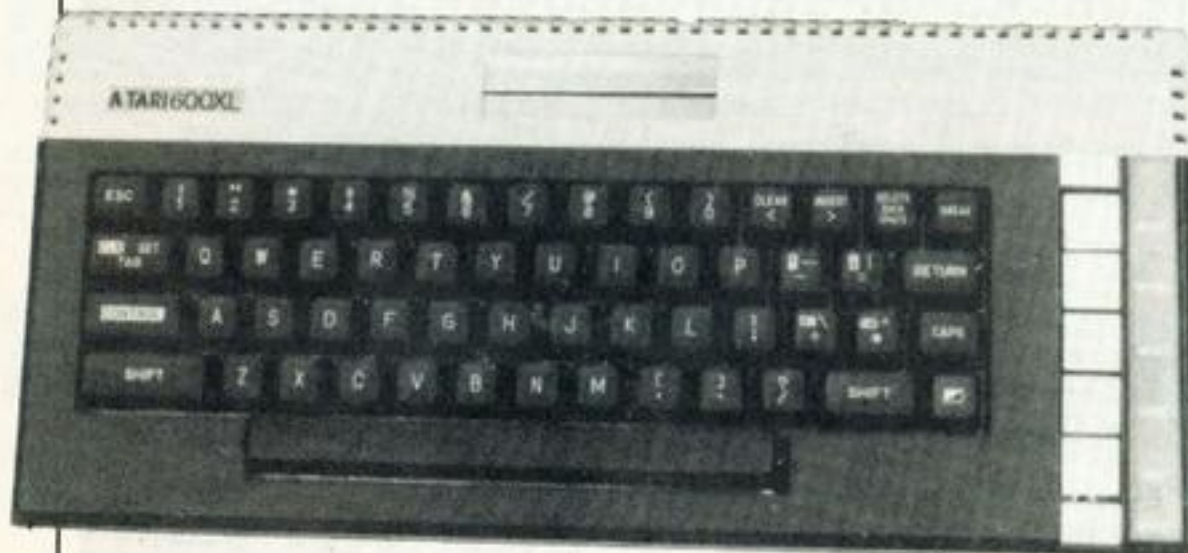
"We probably would have lost the whole place but for a guy working late who heard the glass being broken and called the police."

The fire affected only the ground floor of Fullers, which includes showroom, reception area and repairs and servicing.

## Microdrives 'imminent'

The launch of the long-awaited Microdrives mass storage devices is now imminent, according to a Sinclair Research official.

Sinclair has said little about the Microdrives, except that they are likely to cost around £50 and will need an interface



Atari's new 600XL computer

# GREAT NEW SOFTWARE DEAL



## HOT-SHOTS

The latest list of best selling titles drawn from our database covering national trends.

### ATARI

Zaxxon	£31.40
Choplifter	£29.95
Shamus	£29.95
Miner 20'49er	£29.95
Preppie	£21.99

### B.B.C.

Planetoid	£9.95
Killer Gorilla	£7.99
Moon Raider	£7.99
Rocket Raid	£9.95
Music Processor	£14.95

### COMMODORE 64

Gridrunner	£8.50
Attack of Mutant Camels	£8.50
Pakacuda	£5.99
Matrix	£8.50
Centropods	£5.99

### SPECTRUM

3D Tanx	£4.95
Timegate	£6.95
Arcadia	£5.50
Krazy Kong	£5.50
3D Combat zone	£4.95

### VIC 20

Tornado	£5.95
Trader	£14.95
Boss	£14.95
Choplifter	£29.95
Arcadia	£5.50

### ZX81

Trader	£9.95
Flight Simulations	£5.95
QS Scramble	£3.95
Mazogs	£10.00
Inca Curse	£5.95

**PREDICTION**

Call us for details of best sellers for the Dragon, Oric and Lynx

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## ZX computing US-style

The ZX81 and Spectrum that we all know and love have undergone a dramatic transformation on their way to the USA.

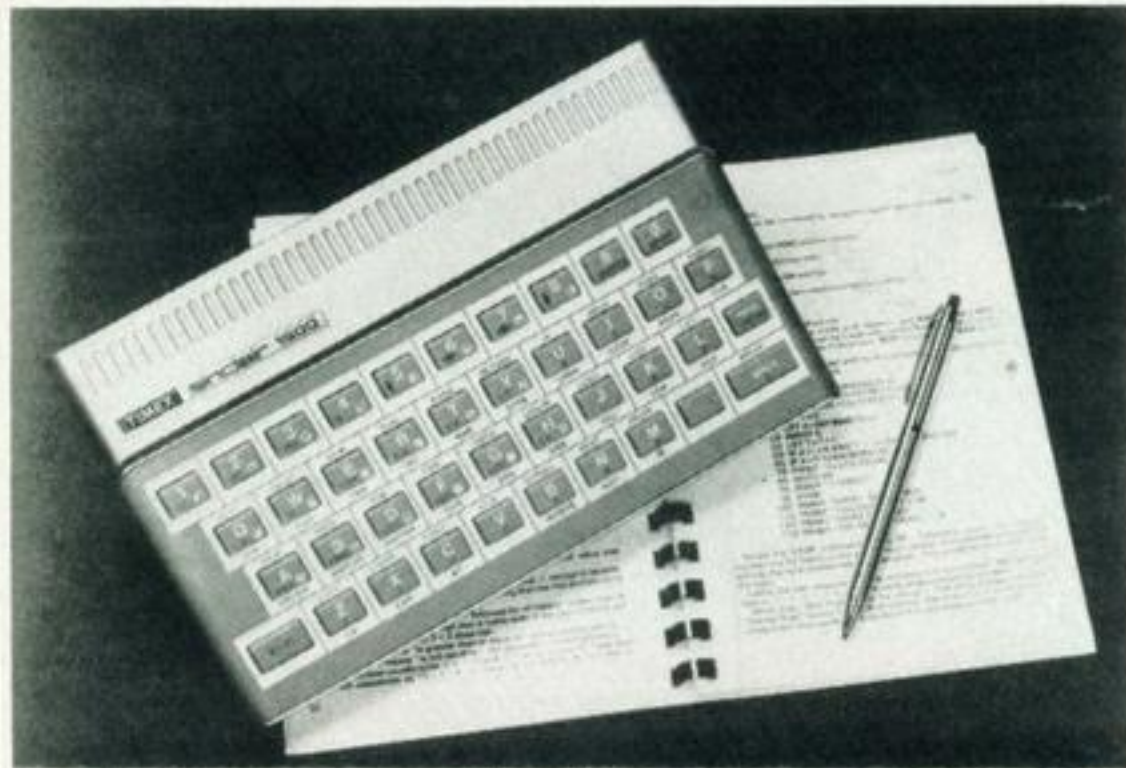
The ZX81 becomes the Timex Sinclair (TS) 1500, and features a silver case, Spectrum-like keyboard and 16K of RAM built in all for around £45.

Timex also sells mini-cartridges to plug into the expansion slot at the back of the machine.

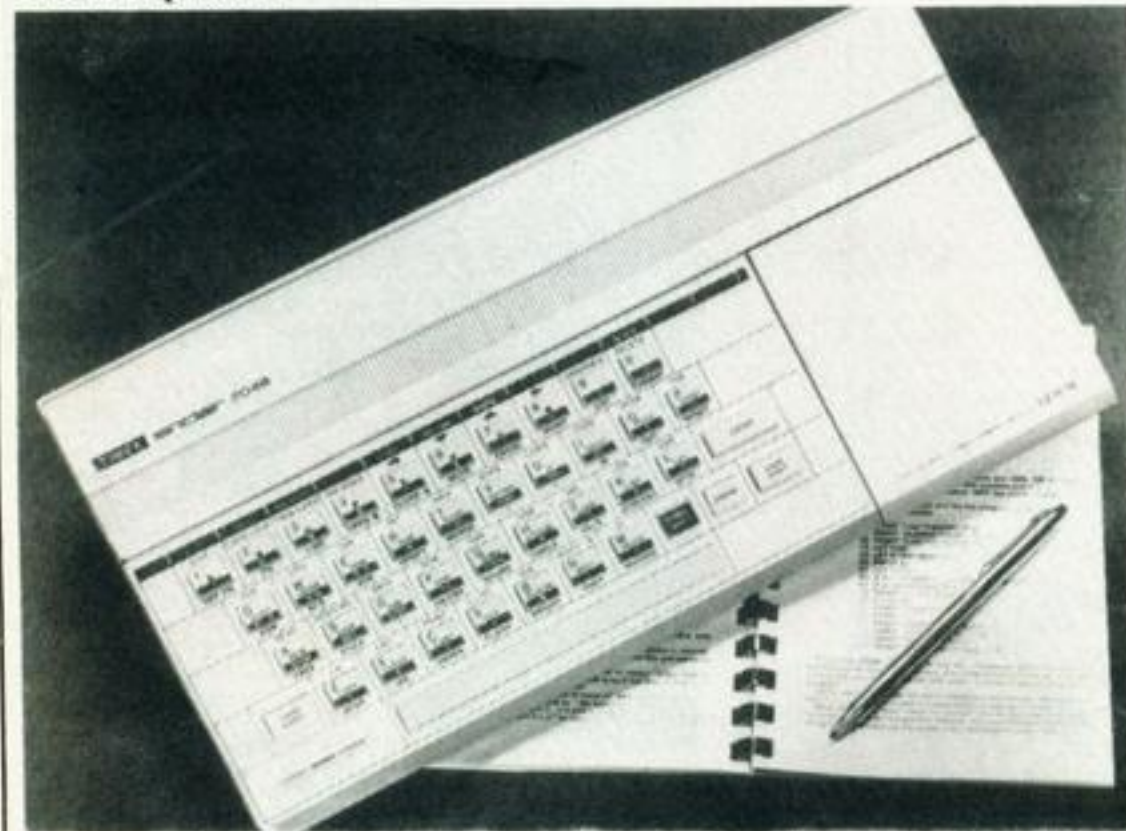
The 48K Spectrum becomes the TS2048. It too has a silver case, plus a special compartment for cartridges and a hole in the side for a joystick.

It has five new commands: ON ERROR GOTO; RESET; FREE, which tells you how much memory is left; STICK, which controls the joystick; and SOUND, which activates a three-channel synthesiser.

And the TS2048 can also switch into a second graphics mode giving 64 characters per line. It's selling for the equivalent of around £135.



The X81 plus...



...And there's a 48K Spectrum in there somewhere

## Raider upgrader

Arcade Software says that Raider of the Cursed Mine, the Spectrum game it launched at the Earls Court Computer Fair, met with such a good response that it's now bringing out a new improved version.

This version, which was being duplicated at the end of last week, will have grade difficulty

levels and the option of joystick control.

And if you manage to get past level 30 and escape from the mine, you'll be rewarded with a picture of the outside world — complete with moon, stars, trees and a house.

Anyone who bought the earlier version of Raider can exchange it for the new one.

Arcade Software, Technology House, 32 Chiselhurst Road, Orpington, Kent BR6 0DG

## A to Z of software

When you've been from Arcadia to Zip Zap and Zzoom, what do you do for an encore? The two Zs are the titles of Imagine's first two games for the 48K Spectrum, and they'll be in the shops soon.

Zip Zap puts you in control of a defective robot, trying to gain the safety of a Tele Portal in the face of opposition from waves of aliens.

Its author is a new arrival at Imagine, Ian Weatherburn, who joined the company in April. But Eugene Evans' position as 17-year-old programming prodigy is safe — Ian is all of 19.

Zzoom is a game with a more familiar theme — rescuing marooned refugees from an enemy intent on wiping them all out. It was written by the grand old man of the company, 36-year-old John Gibson, author of Molar Maul.

Artistic advice on the games

was provided by Gary McNamara, 18, and Steve Blower, 33, from Imagine's very own studio, Studio Sting.

Both games will be packaged in Imagine's new-style cassette boxes. Not only that, but the Zzoom boxes even have a Latin inscription — Nomen Ludi, or "the name of the game" to you. They'll sell for £5.50, like the rest of Imagine's range.

But there's no need to feel inferior if you don't understand Latin — neither does Imagine. The motto was translated for them by the Classics department at Merchant Taylors' School, Liverpool.

And the answer to the original question could be that the company plans to start again from A. Launched along with Zip Zap and Zzoom is a version of Arcadia for the Commodore 64, re-written and enhanced by Eugene Evans himself.

Imagine, Masons Buildings, Exchange Street East, Liverpool L2 3PN

# You could be on our pages

We welcome programs articles and tips from our readers.

**PROGRAMS** should, if possible, be computer printed to a width of 48 characters (use a new ribbon) and/or sent on cassette. Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.

**ARTICLES** on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in HCW. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas, possibly with programming examples. We will convert any sketched illustrations into finished artwork.

**TIPS** are short articles, and brief programming routines which we can put together with others. Your hints can aid other computer users.

Competitive rates are paid.

Keep a copy of your submissions and include an SAE if you want them returned. Label everything clearly and give a daytime and home phone number if you can.

Paul Liptrot, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE

6 NEW GAMES FOR YOUR

commodore **64**



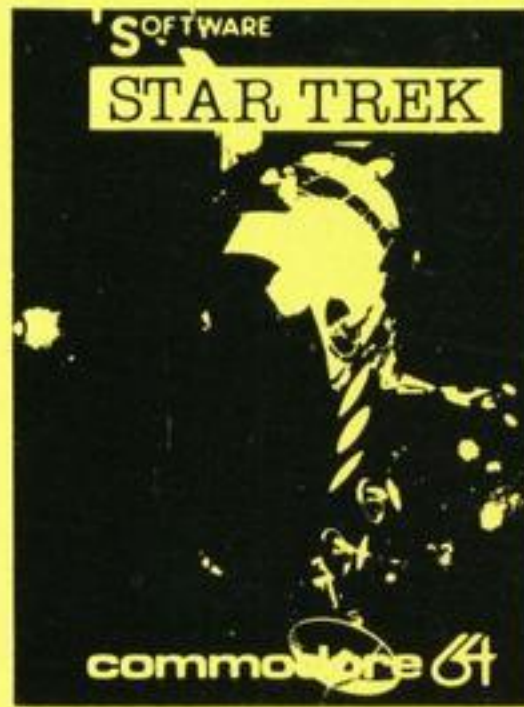
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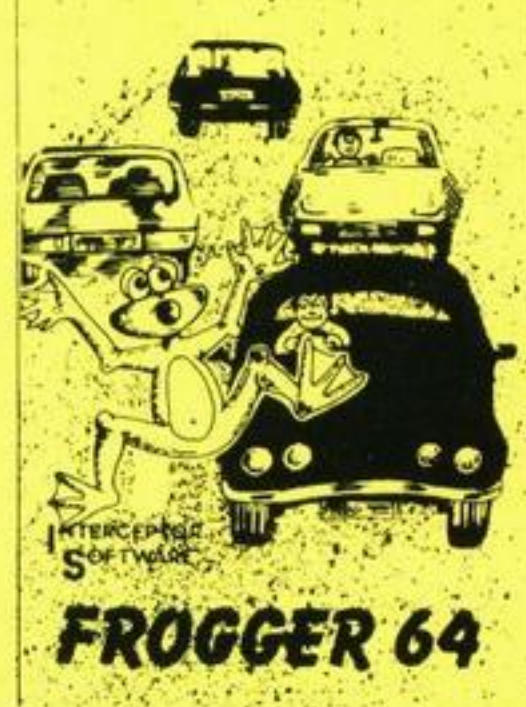
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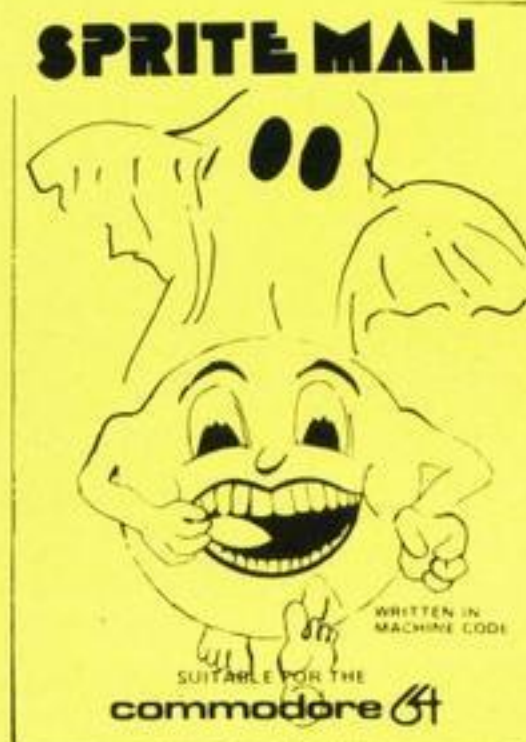


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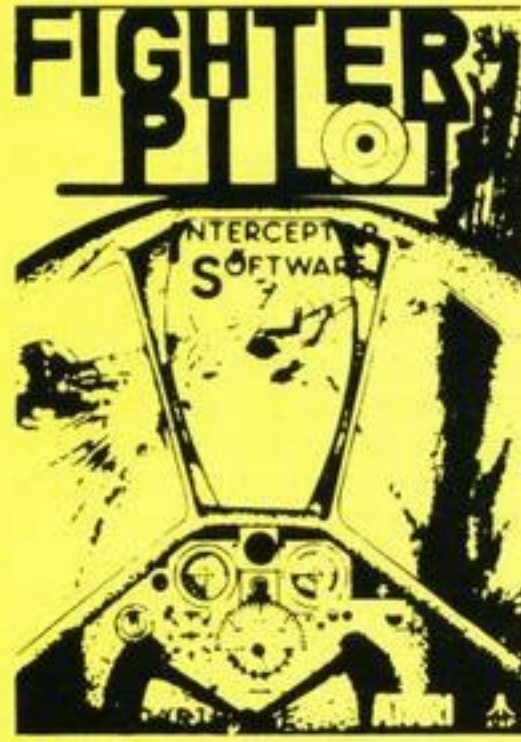
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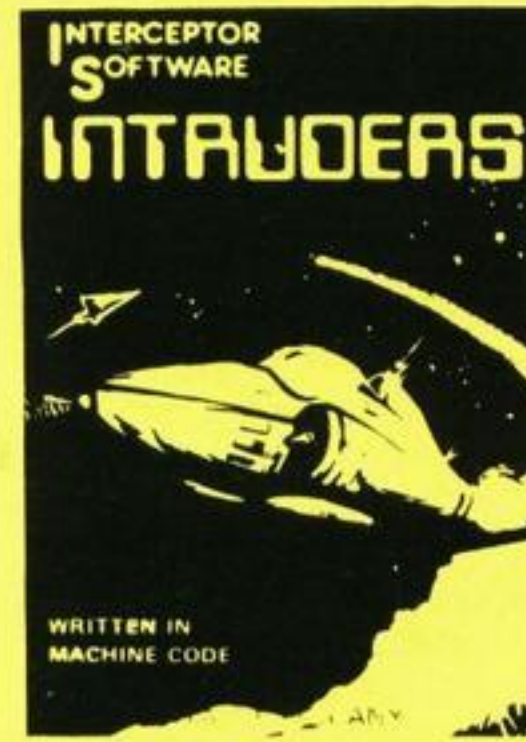
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on a desk or stand alone, and has lockable compartments for micro and cassette recorder, cassettes, manuals and cables. The television stands on top.

The basic version costs £60 and the free-standing version costs £80.

*Abacus Marketing, Abacus House, 60 Barcourne, Worcester WR1 1JA*



The Micro Tidy tidies up your micro

## ZX computers get a voice

You may not be able to talk to your ZX81 or Spectrum, but it will at least be able to talk to you, using the ZXS Speech Synthesiser from Timedata.

At the heart of the ZXS is the SP-0256 chip, which produces basic speech sounds called allophones. The ZXS can be programmed to combine these allophones to produce a wide range of English words and some

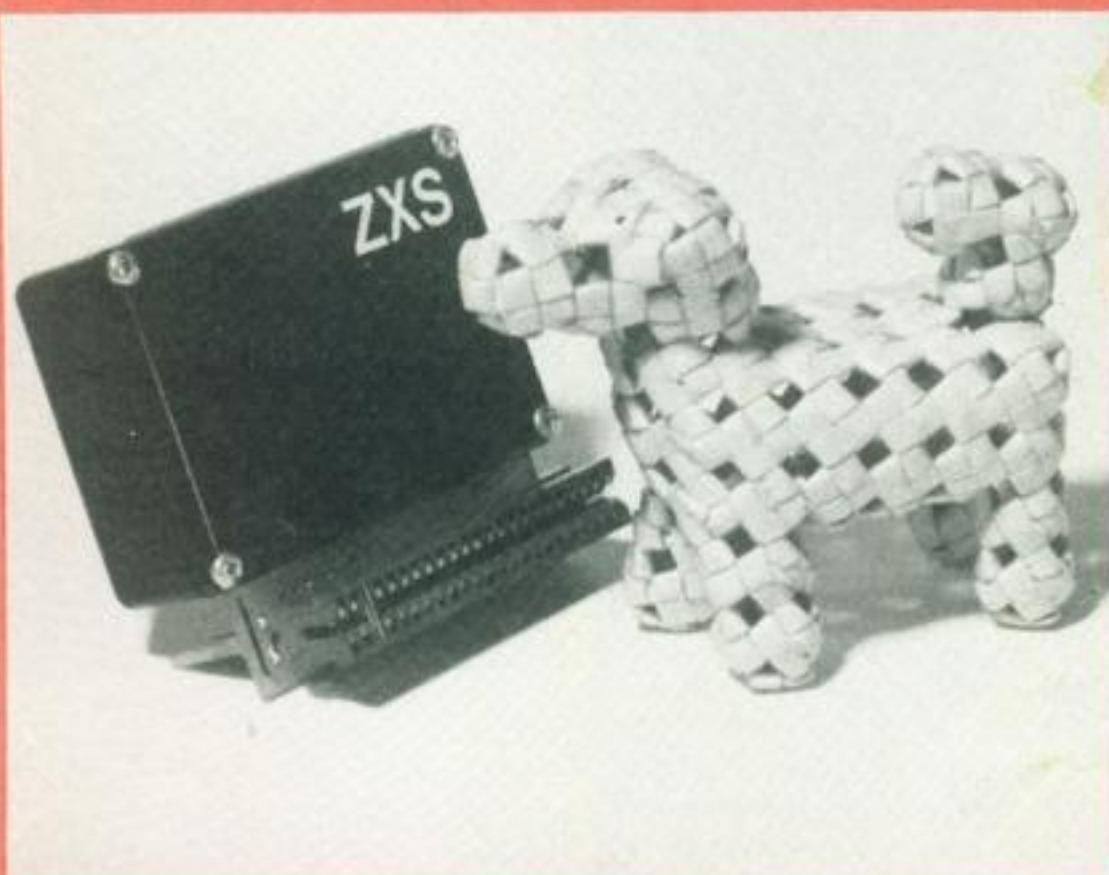
foreign ones.

The result can be fed either to a normal audio amplifier, or to the loudspeaker in a sound box such as Timedata's ZXM.

Looking rather like a 16K RAMpack, the ZXS has an edge connector to allow other devices to be piggybacked on to it.

Timedata reckons that at £32.50, it's the cheapest synthesiser around.

*Timedata, 16 Hemmells, High Road, Laindon, Basildon, Essex SS15 6ED*



Timedata's ZXS — voice for ZX computers

# Give micro addicts a fair dealer

*It's a hard life being a computer addict. You sit at home typing, or reading specialist magazines like this one, and then — you spot an ad for a new computer shop near your home.*

*Excited at the prospect of trying out that new joystick, or that new game with the super smooth graphics, or just a chat with a fellow enthusiast, you rush out at once. You return home shortly afterwards, downcast. The shop was a washout — no new programs, no joysticks, and a sales assistant who might as well have been selling double glazing.*

*Could this be you? Judging by the letters in the computer magazines, which tell of one sob story after another, I should think it quite likely.*

○ ○ ○ ○

*What on earth is the point of computer shops if people like myself can't try out new products? When even programs can cost around £8 each, us teenagers (who after all constitute the majority of home computers enthusiasts, or so the media would have us believe) with limited budgets can't afford to buy a bad program.*

*It has been debated, ad nauseam, whether or not software libraries or the Buy and Try scheme provide a solution. If our local computer shops were doing their job, this debate would be unnecessary. Any program could be tested before being bought.*

*Out of 12 well-advertised stores and specialist shops in my area, not one stocks what the ads say it should, or anything like a decent supply of software. I live in Harrow, but I buy my software from a shop in Exeter, which is helpful, knowledgeable, and gives very fast service (four days after ordering three programs, they arrived, with an apology for the delay!)*

○ ○ ○ ○

*Of course, events such as the Microfairs and the Home Computer Fair fulfill the same function. But they're only held from time to time, and not everyone can afford to go to them.*

*Software companies themselves could help, by giving clearer indications of what the program is like, what language it is written in, etc, so that customers are less likely to buy a program they don't want.*

○ ○ ○ ○

*For example, I saw the ad for Ultimate's two games, Psst and Jet Pac, and decided against buying them. I then saw them at the ZX Microfair, and have since bought them both!*

*Software houses do themselves as well as their customers a great disservice by advertising their programs in a misleading way, as so many (and I don't mean Ultimate now) do. For an arcade game to be exciting and fast enough, it really needs to be in machine code — a fact generally accepted by everyone but the smaller software companies. But once bitten by a misleading ad, buyers will be twice shy of going to the same company again.*

*In HCW 15, news of GOSH — the Group of Software Houses — was announced. I hope that GOSH's members will take note of this plea for improvement. Otherwise, I fear that the sudden expansion of the software market will stop, and the trend may reverse. Bad dealers and software must not be allowed to be spoil it for everyone else.*

David Lester  
Student  
Pinner, Middlesex

● This space is for you to sound off about the micro scene, to present bouquets or to hurl brickbats. Share your views by sending them to Paul Liptrot, Opinion, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Please include your occupation and your interest in computing



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HCW19

# Can you save Miss Muffet from the spider?

## Hints on conversion

The program should be convertible for use on any computer with user-defined characters.

**CALL CHAR** (ASCII code number, hexadecimal string) Defines characters used in the program. The hexadecimal string describes the pattern to be given to the character with ASCII code stated.

**CALL HCHAR** (row number, column number, ASCII code, number of repetitions) Places character on screen at row and column specified, and repeats it horizontally the number of times stated. If this fourth value is omitted then the character is displayed only once. The character used is the one whose ASCII code appears in the command.

**CALL VCHAR** (row number, column number, ASCII code, number of repetitions) Works in the same way as CALL HCHAR only repeats vertically instead of horizontally.

**CALL GCHAR** (row number, column number, numeric, numeric variable) Equivalent of PEEK, assigns ASCII code of character at row and column stated to numeric variable.

**CALL CLEAR** Clears the screen

**CALL SCREEN** (Colour code) Specifies screen colour, using colour code.

**CALL COLOR** (character set number, foreground colour code, background colour code) Specifies foreground and background colours for all characters in set stated.

**CALL SOUND** (duration, frequency, volume) Produces sound with duration, frequency, and volume specified. Duration is in milliseconds, frequency in Hertz (or noise code), and volume in scale from 0 loudest to 30 quietest.

**CALL KEY** (key unit, k,s) Equivalent of INKEYS in other computers, returns code if key pressed in variable k.

## Poor Miss Muffet. She's been chased by a spider into a labyrinth. It's up to you to guide her to the golden door. Lance Booth wrote this program for the standard TI-99/4A

In this game of luck, skill and judgement, an evil spider has chased Miss Muffet into a labyrinth, which is about to fill with deadly green slime. Can you help her to escape in time?

You must guide her — using the four arrow keys with the alpha lock button down — through the labyrinth to the golden door, the only way out.

The spider is patrolling the passages of the labyrinth, spinning webs to block Miss Muffet's

escape. Don't let the spider catch Miss Muffet or it will devour her.

Take care not to let her get caught in a web or to touch the walls of the labyrinth which are covered with the spider's venom.

You set your own difficulty

level, when line 330 asks for your time limit. This sets the limit at which the program leaves the game loop from line 690, and moves to the out of time routine at line 930. A time limit of 150 could be quite a challenge to start with, even if you get the right breaks.

Once you've had some practice, trying to work down to a limit of 100 becomes an addiction.

A variation on the game, where the spider can be made to move from bottom to top, instead of top to bottom, can be achieved by changing line 490 from FOR SR = 3 TO 23 STEP 2 to FOR SR = 23 TO 3 STEP -2.

## How it works

- 130-250 define characters and colours
- 260 sets screen colour to black
- 270-310 assign initial value to variables
- 320 clears screen
- 330 asks for time limit
- 340 clears screen ready for game
- 350-450 display labyrinth
- 460 displays Miss Muffet
- 470 displays Golden Door
- 480-780 main game loop
- 490-770 count down spider movement rows
- 500-510 & 750 control spider's movement along columns
- 520 checks keyboard
- 530 clears old player from screen
- 540-610 check for movement
- 620-660 check new screen positions
- 670 displays new player
- 680 adds one to penalty score
- 690 tests to see if limit is exceeded
- 700-710 check new spider position
- 720-740 move spider
- 760 displays web
- 790-810 touched the wall
- 820-890 eaten by spider
- 900-920 trapped in a web
- 930-990 ran out of time
- 1000-1060 play music
- 1070-1220 escape
- 1230-1250 display message
- 1260-1280 want to play again?

```

110 REM BY LANCE BOOTH
120 REM SET CHARACTERS
130 CALL CHAR(41,"FFFFFFFFFFFFFFFF")
140 CALL CHAR(43,"183C7E183C7E1818")
150 CALL CHAR(128,"183C7EFFFFFFFF")
160 CALL CHAR(136,"7E5A7E7EA5A5A5A5")
170 CALL CHAR(152,"18187E183C7E2424")
180 REM SET COLOURS
190 CALL COLOR(13,12,1)
200 CALL COLOR(14,15,1)
210 CALL COLOR(15,10,10)
220 CALL COLOR(16,11,1)
230 FOR I=2 TO 8
240 CALL COLOR(I,3,1)
250 NEXT I
260 CALL SCREEN(2)
270 MR=23
280 MC=16
290 SCORE=0
300 RANDOMIZE
310 DC=INT(29*RND)+2
320 CALL CLEAR
330 INPUT "WHAT IS YOUR TIME LIMIT?"
    ":LIMIT
    
```



## TI-99/4A PROGRAM

```

340 CALL CLEAR
350 REM SET SCREEN
360 CALL HCHAR(2,1,144,32)
370 CALL HCHAR(24,1,144,32)
380 CALL VCHAR(1,1,144,24)
390 CALL VCHAR(1,32,144,24)
400 CALL HCHAR(1,1,43,32)
410 FOR ROW=4 TO 22 STEP 2
420 CALL HCHAR(ROW,1,144,32)
430 X=INT(29*RND)+2
435 Z=INT(29*RND)+2
440 CALL HCHAR(ROW,X,32)
445 CALL HCHAR(ROW,Z,32)

```

```

450 NEXT ROW
460 CALL HCHAR(MR,MC,152)
470 CALL HCHAR(2,DC,128)
480 REM GAME LOOP
490 FOR SR=3 TO 23 STEP 2
500 Y=INT(29*RND)+2
510 FOR SC=2 TO Y
520 CALL KEY(3,K,S)
530 CALL HCHAR(MR,MC,32)
540 IF K<>83 THEN 560
550 MC=MC-1
560 IF K<>68 THEN 580
570 MC=MC+1
580 IF K<>69 THEN 600

```

```

590 MR=MR-1
600 IF K<>88 THEN 620
610 MR=MR+1
620 CALL GCHAR(MR,MC,GET)
630 IF GET=144 THEN 790
640 IF GET=136 THEN 820
650 IF GET=128 THEN 1070
660 IF GET=42 THEN 900
670 CALL HCHAR(MR,MC,152)
680 SCORE=SCORE+1
690 IF SCORE>LIMIT THEN 930
700 CALL GCHAR(SR,SC,GET)
710 IF GET=152 THEN 820
720 CALL HCHAR(SR,SC,136)
730 CALL SOUND(100,110,0)
740 CALL HCHAR(SR,SC,32)

```

```

750 NEXT SC
760 CALL HCHAR(SR,SC,42)
770 NEXT SR
780 GOTO 480
790 GOSUB 1000
800 M$="MISS MUFFET TOUCHED THE WALL"
810 GOTO 1230
820 FOR I=1 TO 10
830 CALL HCHAR(MR,MC,152)
840 CALL SOUND(50,-5,0)
850 CALL HCHAR(MR,MC,136)
860 NEXT I
870 GOSUB 1000
880 M$="THE SPIDER ATE MISS MUFFET"
890 GOTO 1230
900 GOSUB 1000
910 M$="MISS MUFFET'S TRAPPED IN A WEB"
920 GOTO 1230
930 FOR R=23 TO 3 STEP -2
940 CALL HCHAR(R,2,41,30)
950 CALL SOUND(-500,110+(R*10),0)
960 NEXT R
970 GOSUB 1000
980 M$="THE SLIME KILLED MISS MUFFET"
990 GOTO 1230
1000 REM DEATH TUNE
1010 TONE=1100
1020 FOR C=1 TO 10
1030 CALL SOUND(+500,TONE,0)
1040 TONE=TONE-110
1050 NEXT C

```

```

1060 RETURN
1070 NOTE=110
1080 FOR C=1 TO 10
1090 CALL SOUND(-500,NOTE,0)
1100 NOTE=NOTE+110
1110 NEXT C
1120 CALL HCHAR(1,MC,152)
1130 M$="WELL DONE MISS MUFFET ESCAPED"
1140 CALL CLEAR
1150 PRINT "YOUR SCORE IS";SCORE
1160 PRINT
1170 PRINT "PENALTY POINTS"
1180 PRINT
1190 CALL HCHAR(9,1,152,32)
1200 CALL HCHAR(10,1,43,32)
1210 CALL HCHAR(12,1,42,32)
1220 CALL HCHAR(13,1,136,32)
1230 FOR J=1 TO LEN(M$)
1240 CALL HCHAR(11,1+J,ASC(SEG$(M$,J,1)))
1250 NEXT J
1260 INPUT "WANT TO PLAY AGAIN? ";A$
1270 IF SEG$(A$,1,1)="Y" THEN 270
1280 IF SEG$(A$,1,1)<>"N" THEN 1260
1290 END

```

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## SOFTWARE REVIEWS

### Airstrike Atari 400/800 £14.95

English Software, 50 Newton St, Piccadilly, Manchester

Airstrike seems popular as a demonstration at shows, and I can see why. It's a very good implementation of the arcade game Scramble.

There are all the usual objects — rockets, fuel and ammo dumps, mine storms, enemy aircraft and airlocks to be blasted through with the famous scramble landscape of rugged terrain and tortuous tunnels. After com-

pleting a level, you enter a more difficult one.

Your ship has a very positive feel, with missiles and bombs operated by the joystick button and the space bar. Fuel, score, remaining bombs and missiles and ships are all shown during play. The balance of this game is a lesson to others.

M.F.

instructions	70%
playability	90%
graphics	90%
value for money	85%



### Skramble VIC-20 £5.99

Rabbit, 380 Station Road, Harrow, Middx HA1 2DE

Some of you may have noticed a similarity between the name of this game and that of a popular arcade game. This is no mistake!

Across an alien landscape flies our hero, dropping bombs and shooting things. There is no division of control between the gun and the bomb; fire one and you drop the other.

The enemy consist of what appear to be free-standing lavatory buildings with

associated winding gear. Later little rockets are launched at our space ship, which seems to be oil fired, as it is large tanks of this that we must hit in order to keep fuel up.

There are some pretty spiders to shoot next, and then the game gets difficult...

I liked this game but it is rather flawed by the scoring system. Cumulative score is kept on the screen all through the game and then it disappears!

T.D.

instructions	70%
playability	50%
graphics	90%
value for money	55%



### Annihilator VIC-20 £5.99

Rabbit, 380 Station Road, Harrow, Middx HA1 2DE

This is a Defender sub-clone, and I reckon it's a pretty good one. You know the plot: you're patrolling the rocky terrain of a distant planet when who should appear but etc, etc...

Arcade games provide software writers with games to copy but also with impossibly high standards to reach. This time, the shortcomings of a little memory have to a great extent been overcome by adaption. The attackers come in waves, and the mobility

of the defending space ship is limited.

However, this is a very well-thought-out game, and one that should provide a great deal of pleasure for many of its purchasers. It sounds like a whole arcade of space invader machines gone crazy, but let's not hold that against it.

T.D.

instructions	45%
playability	78%
graphics	80%
value for money	85%



# Legends in their own lifetime

Invaders, Scramble, Defender, Preppie — names that have gone down in microcomputer mythology

### Preppie II Atari 400/800 32K (disc) £25.49

From Atari mail order companies

Yes folks, he's back. Just when the other micros thought they were catching up, Wadsworth Overcash — America's Number 1 Preppie — is in it again.

This time the owner of the Nasty Nine, furious after his defeat, has Wadsworth painting the floor of three mazes, whilst avoiding collision with the obstacles retained from Preppie. In the third and first mazes are

numerous giant frogs out for revenge.

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graphics	99%
value for money	100%



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R.S.

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playability	80%
graphics	75%
value for money	90%



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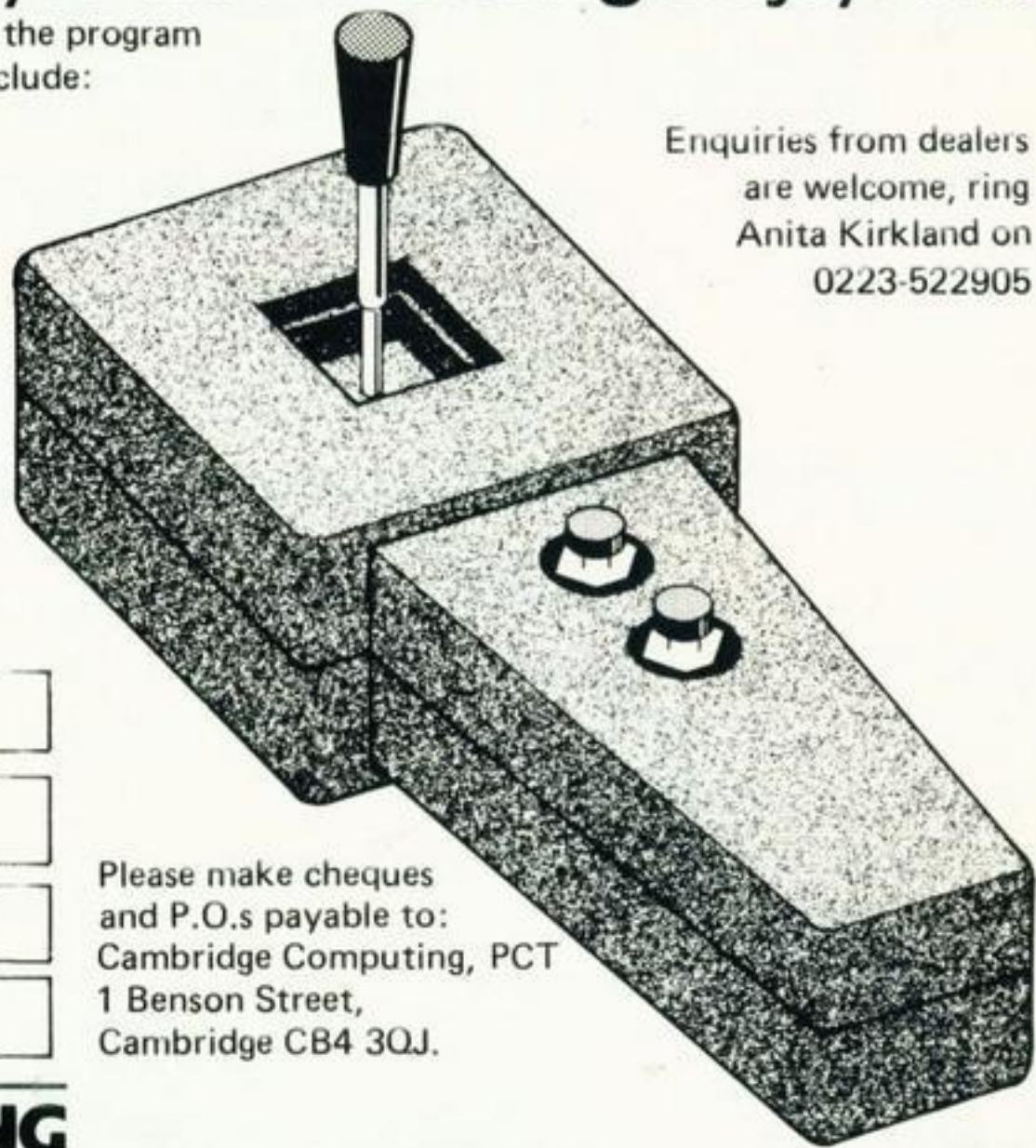
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# Your mission: save the fleet

Just you and your Spectrum can defend the fleet against a rain of bombs in Susan Kennedy's program



sight movement loop approximately every 400 msec by testing for a difference of 20 in the least significant time frame byte from the time of the last bomb movement.

This is less accurate than using all three time frame bytes, but much faster, and the occasional quick movement of the bomb is not noticeable in the overall effect.

The time that could be taken to detect a hit on one of the ships would be slow if one had to search an array of screen locations.

This problem is neatly overcome by giving the ships a unique character attribute (41) and as much a hit can be detected by simply checking the attribute of the next bomb position. Once a hit has been established there is no longer the need to save time and a search can be made to find which ship was hit.

This game is fairly simple in concept and is aimed at showing that by giving thought to time

### Variables

SC current score  
BSc best score  
S(5) array of ship locations  
T current system time  
T2 system time at last bomb move  
X,Y target sight screen position  
C bomb left count  
X2,Y2 bomb screen position  
AS input key pressed

saving an arcade game can be written in BASIC. However, providing the time available to moving the gunsight is maintained, many improvements could be made such as:

- Slow down bomb movement but increase the number of simultaneous bombs.
- Introduce graphic lines of fire from the ships.
- Introduce random explosive flashes on the screen aimed at confusing the player.

I recommend that you first type in and run lines 10-50, which set up the user-defined graphics. This will aid you when typing in the graphic lines in the rest of the program.

The graphics are: A bomb, B gunsight, CDE ship, FGH submarine, I explosion.

### How it works

10-50 set up user-defined graphics  
60 initialise best score and score  
80-90 POKE system variable to force CAPS lock  
110-160 set up array S with ship character  
170-210 initialise variables, INK black, PAPER cyan  
220-240 draw sea. Note: PRINT 32 spaces  
245-300 draw the ships. Note: INK 1, PAPER 5, no BRIGHT and no FLASH, give display character attribute 41 uniquely to the ships  
310-360 update scores and initialise target sight X, Y at screen centre  
370 compute random bomb start position  
395-480 input arrow key presses and move sight accordingly, ensuring sight stays within screen boundary  
490 GOTO 1000 if F(fire) key pressed  
510 GOTO 2000 if time to move bomb  
1000-1040 check for bomb hit and adjust score accordingly  
2000-2030 move bomb, accounting for any PAPER change  
2040-2160 is ship hit, i.e. bomb coincident with location of attribute 41, then search for which ship and explode it. Subtract 50 from score  
2200-2220 if sea bottom reached explode bomb and return to produce new bomb  
3000-3030 end of game questions  
4000-4060 bomb explosion subroutine

Save the Fleet puts you in charge of a gun-sight with which you must aim and shoot down the bombs that are dropping on your fleet of ships.

The four arrow keys (5,6,7 and 8) control the gunsight movement with the F key being used for the fire button.

The bombs will appear randomly across the screen and at varying heights, thus increasing the uncertainty during the total attack of 50 bombs.

Scores in the game are accumulated by intercepting the bomb, with a higher score, the higher up the screen the bomb is hit. If you are too slow and a bomb hits a ship then you lose 50 points.

In order to maximise the speed of gun-sight movement whilst maintaining bomb movement and to overcome the problem of the Spectrum screen layout, a few interesting techniques have been employed.

The program leaves the gun-

```

10 REM SET UP USER GRAPHICS
20 DATA 255,255,66,60,60,24,24
17,7,7,255,129,66,60,36,36,60,60,129,24
255,255,255,129,66,60,36,36,60,60,129,24
255,255,255,129,66,60,36,36,60,60,129,24
15,192,192,192,192,192,255,255,63,192,255
255,0,0,64,240,252,252,240,17,
186,124,62,255,126,92,138
30 FOR I=32600 TO 32671
40 READ A: POKE I,A
50 NEXT I
60 LET SC=0: LET BSC=0
70 RANDOMIZE
80 REM SET CAPS LOCK
90 POKE 23658,8
100 BORDER 0
110 DIM S(5)
130 DATA 3,9,13,18,25
140 FOR I=1 TO 5
150 READ S(I)
160 NEXT I
170 CLS
180 IF BSC<SC THEN LET BSC=SC
190 LET T2=0: LET C=51: LET SC=
200 INK 0: PAPER 5
210 LET X=10: LET Y=16
220 FOR I=19 TO 21
230 PRINT AT I,0;"..
240 NEXT I
245 REM DRAW SHIPS-ATTR 41
    
```

## SPECTRUM PROGRAM

```

2050 INK 1
2060 PRINT AT 19,3; " "
2070 PRINT AT 19,13; " "
2080 PRINT AT 19,23; " "
2090 PRINT AT 21,9; " "
3000 PRINT AT 21,25; " "
310 INK 0: PAPER 7
320 PRINT AT 0,16; "HIGH SCORE="
350
330 PAPER 7: PRINT AT X,Y; " "
340 LET X=10: LET Y=16
350 PRINT AT 0,0; " "
360 PRINT AT 0,0; SC
365 REM START POSITION OF BOMB
370 LET X2=(INT (RND*6))+1: LET
Y2=INT (RND*32)
380 LET C=C-1
390 IF C=0 THEN GO TO 3000
400 LET A$=INKEY$
410 IF A$="6" THEN PRINT AT X,Y
" "
LET X=X+1
420 IF A$="7" THEN PRINT AT X,Y
" "
LET X=X-1
430 IF A$="8" THEN PRINT AT X,Y
" "
LET Y=Y+1
440 IF A$="5" THEN PRINT AT X,Y
" "
LET Y=Y-1
450 LET X=ABS X: LET Y=ABS Y
460 IF X>10 THEN LET X=10
470 IF Y>31 THEN LET Y=31
480 PRINT AT X,Y; "X"
485 REM FIRE PRESSED ?
490 IF A$="F" THEN GO TO 1000
500 LET T=PEEK 23672
505 REM TIME TO MOVE BOMB ?
510 IF ABS (T-T2)>20 THEN GO TO
2000
520 GO TO 400
995 REM TEST FOR HIT
1000 IF X2<>X THEN GO TO 400
1010 IF Y2<>Y THEN GO TO 400
1020 GO SUB 4000
1030 LET SC=SC+INT (100/X2)

```

```

1040 GO TO 330
2000 IF X2>=19 THEN PAPER 5
2010 PRINT AT X2,Y2; " "
2015 REM MOVE BOMB
2020 LET X2=X2+1
2030 IF X2=19 THEN PAPER 5
2040 IF ATTR (X2,Y2)<>41 THEN GO
TO 2100
2055 REM HIT SHIP BUT WHICH ?
2060 FOR I=1 TO 5
2070 FOR J=0 TO 2
2080 IF Y2=S(I)+J THEN GO TO 211
0
2090 NEXT J
2100 NEXT I
2105 REM EXPLODE SHIP
2110 FLASH 1: BRIGHT 1: INK 2
2120 PRINT AT X2,S(I); " "
2130 BEEP 1,1
2140 FLASH 0: BRIGHT 0: INK 0
2150 PRINT AT X2,S(I); " "
2160 LET SC=SC-50
2170 PAPER 7: GO TO 330
2180 PRINT AT X2,Y2; " "
2190 LET T2=T
2195 REM TEST FOR SEA BOTTOM
2200 IF X2<>21 THEN PAPER 7: GO
TO 400
2210 GO SUB 4000
2220 PAPER 7: GO TO 330
3000 PRINT AT 5,0; "PLAY AGAIN (Y
OR N) "
3010 IF INKEY$="Y" THEN GO TO 17
0
3020 IF INKEY$="N" THEN NEW
3030 GO TO 3010
3995 REM BOMB EXPLOSION
4000 FLASH 1: BRIGHT 1: INK 2
4010 PRINT AT X2,Y2; " "
4020 BEEP .5,1
4030 FLASH 0: BRIGHT 0: INK 0
4040 PRINT AT X2,Y2; " "
4050 RETURN

```

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## DRAGON PROGRAM

# Plasma bolts at the ready

Those aliens are at it again. See how many you can blast into oblivion in Brian Hughes' game for the Dragon

```

10 PMODE 3:PCLS3: CLEAR 200,31999
20 GOSUB1090:GOSUB720:GOSUB 1250
30 FOR I=1 TO 50:PSET(RND(256)-1,RND(176)+8,2):N
EXT I
40 POKE &HFFD7,0:SCREEN1,0
50 X=INT(JOYSTK(0)*3.79)
60 IF X=X1 THEN 90
70 PUT(X1,0)-(X1+15,7),LB,PSET
80 PUT(X,0)-(X+15,7),SP,PSET:X1=X
90 IF PB<1 THEN GOTO 230
100 BH=PEEK(65280)AND3
110 IF BH<2 THEN GOTO 230
120 PB=PB-1
130 PUT(234,184)-(241,191),BL,PSET:XC=PB:NX=250:
ZQ=2:GOTO 530
140 COLOR 2,3
150 NK=160
160 IF X+7<XF THEN 190
170 IF X+7>XF+7 THEN 190
180 NK=YF+4
190 LINE(X+7,8)-(X+7,NK),PSET
200 LINE(X+7,NK)-(X+7,8),PRESET
210 SOUND 100,1
220 IF NK<>160 THEN 380
230 PUT(XF,YF)-(XF+7,YF+7),BL,PSET
240 IF YF>7 THEN 280
250 IF XF>X+15 THEN 280
260 IF XF<X THEN 280
270 GOTO 440
280 GET(FX,FY)-(FX+7,FY+7),BL,G
290 PUT(FX,FY)-(FX+7,FY+7),TH,PSET

```

The object of Dragatak is to shoot down as many aliens as you can as they try to move erratically up the screen and past your space station.

You have control of horizontal movement through the right hand joystick, but don't get too close as you shoot or you may collide!

You score 100 or more points for each alien you destroy depending on how far away they are when you hit them.

The game ends when:

- Ten aliens have got past you or
- You have run out of plasma bolts or
- You collide with an alien

There is a continuous read-out at the bottom of the screen showing, from right to left, the number of lives the aliens have left; your current score; and the number of plasma bolts you have left.

### Variables

#### Arrays

SP space station graphic (base)  
BL/LB blanking graphics  
EX explosion graphic  
TH alien graphics  
No to N9 numeral graphics for score display

#### Simple

X,Y co-ordinates of space station  
X1,Y1 co-ordinates of space station's previous position  
XF,YF co-ordinates of alien  
FX,FY co-ordinates of alien's previous position  
PB number of plasma bolts remaining  
LV number of lives remaining

```

300 XF=FX:YF=FY
310 IF FY<8 THEN 490
320 FY=FY-8
330 H=ZT(RND(2))
340 IF FX<8 THEN H=8
350 IF FX>239 THEN H=-8
360 FX=FX+H
370 GOTO 50
380 PLAY "V31":FOR I=1 TO 5
390 PUT(XF,YF)-(XF+7,YF+7),EX,PSET
400 PUT(XF,YF)-(XF+7,YF+7),BL,PSET
410 PLAY"T255;V<:AGDEFDCRBBGDDFA"
420 NEXT I:FX=RND(248)-1:FY=177:XF=0
430 SC=SC+100+INT(YF/32)*100:YF=9:GOTO 520
440 EXEC 32000:POKE &HFFD6,0:FOR I=1 TO 5
450 SOUND182,5:SOUND150,4
460 NEXT I
470 A$=" you've been hit by an alien "
480 PCLS3:GOTO 1000
490 FX=RND(248)-1:FY=177
500 LV=LV-1
510 IF LV<1 THEN GOTO 580 ELSEXC=LV:NX=24:ZQ=1:G
OTO 530
520 XC=SC:NX=160:ZQ=1
530 RM=XC-(INT(XC/10)*10):NX=NX-10
540 RM=RM+1
550 ON RM GOSUB 620,630,640,650,660,670,680,690,

```

```

700,710
560 XC=INT(XC/10)
570 IF XC<1 THEN ON ZQ GOTO 50,140 ELSE GOTO 530
580 POKE &HFFD6,0
590 SOUND 1,10
600 A$=""
610 GOTO 1000 alien attack over
620 PUT(NX,184)-(NX+7,191),N0,PSET:RETURN
630 PUT(NX,184)-(NX+7,191),N1,PSET:RETURN
640 PUT(NX,184)-(NX+7,191),N2,PSET:RETURN
650 PUT(NX,184)-(NX+7,191),N3,PSET:RETURN
660 PUT(NX,184)-(NX+7,191),N4,PSET:RETURN
670 PUT(NX,184)-(NX+7,191),N5,PSET:RETURN
680 PUT(NX,184)-(NX+7,191),N6,PSET:RETURN
690 PUT(NX,184)-(NX+7,191),N7,PSET:RETURN
700 PUT(NX,184)-(NX+7,191),N8,PSET:RETURN
710 PUT(NX,184)-(NX+7,191),N9,PSET:RETURN
720 POKE &HFFD7,0
730 DIM SP(15,8),BL(8,8),LB(16,8),EX(8,8),TH(8,8)
,N6(8,8),N1(8,8),N2(8,8),N3(8,8),N4(8,8),N5(8,8)
,N6(8,8),N7(8,8),N8(8,8),N9(8,8):ZT(2):X1=0
740 ZT(1)=8:ZT(2)=-8:FX=RND(248)-1:FY=177:XF=0:Y
F=9:H=8:SC=0:PB=50:LV=10
750 FOR I=0 TO 15:FORJ=0 TO 1:PSET(I,J,4):NEXTJ,

```

### How it works

- 30 sets a background of randomly located stars
- 40 increase speed
- 50-80 check joysticks and move base accordingly
- 90 checks for out of plasma bolts
- 100 checks for fire button being pressed
- 140-220 fire plasma bolt and check for hit
- 230-290 check for collision between alien and base
- 300-370 move alien randomly up screen
- 380-420 make a struck alien explode and generate appropriate sound (note the use of a fast tempo, multi-noted 'play' string for an interesting sound effect)
- 430 updates score for a hit and branches to score display routine
- 440-480 collision routine: inverts screen via machine code procedure; then sounds klaxon
- 490-510 reset variables for restart. Checks for running out of lives which is dealt with in 580-610
- 520-710 update and displays current scores
- 720-990 sets up all the graphic arrays to be used in 'put/get' operations in the main loop
- 1000-1080 "do you want to play again?" screen — resets variables if answer is yes
- 1090-1230 fill screen with playing instructions. There is a delay loop at 1220 which can be altered if wished
- 1250-1290 sets up machine code routine for screen inversion

### Hints on conversion

Not recommended! Definitely a case for writing your own version. If you have a machine that supports user defined graphics and allows text on graphic screens then you could construct a more compact program than this.

## DRAGON PROGRAM

```

760 FOR I= 2 TO 13:FOR J= 2 TO 3:PSET(I,J,4):NEX
T J,I
770 FOR I=4 TO 11:FOR J= 4 TO 5:PSET(I,J,4):NEXT
J,I
780 FOR I= 6 TO 9:PSET(I,6,4):NEXT I
790 FOR I=7 TO 8:PSET(I,7,4):NEXT I
800 GET(0,0)-(15,7),SP,G:PCLS3
810 GET(0,0)-(7,7),BL,G:PCLS3:GET(0,0)-(15,7),LB
,G:PCLS3
820 FOR I= 3 TO 4:PSET(I,0,1):NEXT I:FOR I=2 TO 5
:PSET(I,1,1):NEXT I:FOR I=2 TO 3:FOR J=1 TO 6:PSET(J,I,
1):NEXT J,I
830 FOR I= 4 TO 5:FOR J=2 TO 5:PSET(J,I,1):NEXT J
,I
840 FOR I= 0 TO 1:PSET(I+1,6,1):PSET(I+5,6,1):NE
XT I
850 FOR I=0 TO 7:PSET(I,7,1):NEXT I
860 GET(0,0)-(7,7),TH,G:PCLS3
870 FOR I= 1 TO 34:PSET(RND(0)-1,RND(0)-1,2):NEX
T I
880 GET(0,0)-(7,7),EX,G:PCLS3
890 FOR I=0 TO 6 STEP 2:PSET(I,0,2):PSET(I,7,2):
NEXT I:FOR I=0 TO 7:PSET(0,I,2):PSET(7,I,2):NEXT
I
900 GET(0,0)-(7,7),N0,G:PCLS3
910 FOR I=0 TO 7:PSET(4,I,2):NEXT I:GET(0,0)-(7,
7),N1,G:PCLS3
920 FOR I=0 TO 6 STEP 2:PSET(I,0,2):PSET(I,3,2):
PSET(I,7,2):NEXT I:FOR I=1 TO 3:PSET(6,I,2):PSET
(0,I+3,2):NEXT I:GET(0,0)-(7,7),N2,G:PCLS3
930 FOR I=0 TO 6 STEP 2:PSET(I,0,2):PSET(I,3,2):
PSET(I,7,2):NEXT I:FOR I=0 TO 7:PSET(6,I,2):NEXT
I:GET(0,0)-(7,7),N3,G:PCLS3
940 FOR I=0 TO 6 STEP 2:PSET(I,3,2):NEXT I:FOR I
=0 TO 3:PSET(0,I,2):PSET(5,I,2):PSET(5,I+4,2):NEX
T I:GET(0,0)-(7,7),N4,G:PCLS3
950 FOR I=0 TO 6 STEP 2:PSET(I,0,2):PSET(I,3,2):
PSET(I,7,2):NEXT I:FOR I=0 TO 3:PSET(0,I,2):PSET
(6,I+4,2):NEXT I:GET(0,0)-(7,7),N5,G
960 FOR I=4 TO 6:PSET(0,I,2):NEXT I:GET(0,0)-(7,
7),N6,G:PSET(6,1,2):PSET(6,2,2):GET(0,0)-(7,7),N
8,G
970 FOR I=0 TO 4 STEP 2:PSET(I,7,3):NEXT I:FOR I=
4 TO 6:PSET(0,I,3):NEXT I:GET(0,0)-(7,7),N9,G:PC
LS3
980 FOR I=0 TO 6 STEP 2:PSET(I,0,2):NEXT I:FOR I
=1 TO 7:PSET(6,I,2):NEXT I:GET(0,0)-(7,7),N7,G
990 RETURN
1000 SCREEN0,0:CLS
1010 PRINT@96,A$
1020 PRINT@230,"YOUR FINAL SCORE IS:-";SC
1030 PRINT@416,"do you want to Play again?(YORn)
"
1040 F$=INKEY$:IF F$="" THEN 1040
1050 IF F$<>"Y" THEN CLS:END
1060 LV=10:PB=50:SC=0:FX=RND(248)-1:FY=177:XF=0:
YF=9
1070 PCLS3
1080 POKE &HDDF7,0:GOTO 30
1090 CLS:PRINT@10,"alien attack"
1100 PRINT@64,"SHOOT DOWN THE INVADING ALIENS"
1110 PRINT@96,"AS THEY TRY TO PASS YOU"
1120 PRINT@160,"YOU SCORE 100+ FOR EVERY ALIEN"
1130 PRINT@192,"YOU HIT-BUT WATCH OUT FOR"
1140 PRINT@224,"COLLISIONS!YOU CAN MOVE YOUR"
1150 PRINT@256,"SPACE STATION HORIZONTALLY USING
"
1160 PRINT@288,"THE RIGHT HAND JOYSTICK,AND FIRE
"
1170 PRINT@320,"PLASMA BOLTS USING THE FIRE"
1180 PRINT@352,"BUTTON-BUT BEWARE-YOU ONLY HAVE"
1190 PRINT@384,"50 BOLTS.THE ALIENS WILL KEEP"
1200 PRINT@416,"COMING AS LONG AS YOU SHOOT THEM
"
1210 PRINT@448,"DOWN-YOU HAVE TEN LIVES"
1220 FOR I=1 TO 3500:NEXT I
1230 RETURN
1250 FOR I= 1 TO 26
1260 READ A:POKE I+31999,A
1270 NEXT I
1280 RETURN
1290 DATA 198,9,142,6,0,166,136,0,67,167,136,0,4
8,136,1,140,30,0,38,241,90,193,0,38,233,57

```

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## READ-OUT

HCW19



# Computer flights of fantasy

Know the fear of flying with these aerial adventures for a range of micros.

## Nightflight Dragon 32 £7.95

Salamander Software, 27 Ditching Rise, Brighton, East Sussex BN1 4QL

If this is a flight simulator I am green with yellow stripes (I'm not!). The Dragon can do, and has done, much better stuff than this. The best thing about the game is the opening title page, and even then they played Those Magnificent Men in their Flying Machines wrong!  
Low resolution graphics, bad use of colour and unrealistic

sound. The scene did not look at all like a plane cockpit...no dials, all the same presentation. I would now like to say "on the plus side", but there isn't a plus side. I suppose the instructions were clear(ish) but they weren't relevant to the game.

Psion's flight simulation program for the ZX81 is much better than this, it has higher resolution graphics, is more responsive and more realistic.

	<b>P.S.</b>	
instructions		80%
playability		10%
graphics		10%
value for money		3%



## Night Flight TI-99/4A £5.00

Stainless Software, 10 Alstone Road, Stockport, Cheshire

As commander of the Starship Patscram, it is your task to clear a landing strip in a hostile city defended by ground lasers and spacecraft.  
This is an addictive game which requires dexterity to manipulate the 10 keys needed to play fully. There are plenty of skill levels and great scope for player improvement.

You score points for forward movement and firing splat bombs but these diminish your fuel. Points are also awarded for

destroying the enemy, safe landing and refuelling. High scores can be saved on tape.

This is a lengthy program to load but there is only a minimum delay in setting up. It has at least two bugs:

- 1 The acceleration command lets your ship eat the right-hand boundary.
- 2 Bomb speed keys are inoperable if ship's control keys are reselected.

But these are minor irritations in what is otherwise a very good TI game.

	<b>C.E.</b>	
instructions		90%
playability		80%
graphics		90%
value for money		90%



## Winging It TI-99/4A £10

Not Polyoptics, from Stainless Software, 10 Alstone Road, Stockport, Cheshire SK4 5AH

Could this be the first flight simulator for the TI? Once you've mastered basic flying, you can progress to one of three games. In game 1 you locate and fly over a meteorite, game 2 sets you the task of finding and destroying a flying saucer, and in game 3 you are pitted against an enemy plane.

There's no 3D view of the runway or the like, but there is a first-class display of the instru-

ment panel, and realistic engine noises. Comprehensive instructions are supplied.

The instructions warn that beginners may have a rough ride, and they aren't kidding. Taking off was OK, but once in the air I found an affinity for flying upside down and making unscheduled and rather violent landings.

Still, practice makes perfect. I thought this was an excellent program, which should appeal to budding pilots of all ages.

	<b>D.B.</b>	
instructions		100%
playability		90%
graphics		90%
value for money		90%



## Landfall BBC B £7.95

Virgin Games, 61/13 Portobello Road, London W11

This is a sort of sophisticated Lunar Lander, though as the landing process is all done by instruments, it could be more aptly described as a spaceship landing simulator.

The overall effect is very convincing, colour is unobtrusive but effective, and the sounds (which you can switch off) are realistic.

Landing safely is no easy feat - you really have to watch all the gauges and keep a balance

to avoid being burned up on entry. I never managed to land at all, and would have liked some sort of variable difficulty level or practice option.

The program loads in three blocks, and after loading the first I had all the signs of a crash on my hands. After several attempts I just let it continue, and it loaded the second block - a screen picture, then the game.

	<b>R.E.</b>	
instructions		80%
playability		67%
graphics		73%
value for money		86%



## Up Up and Away Atari 400/800 £14.95

Starcade, 15 Moorfields, Liverpool, L22 8Q

If you've worn your nerve-endings to a frazzle with pacman, invading creatures and perilous adventures, perhaps you think hot-air ballooning would make a nice quiet change. Take it from me - Up Up and Away will make you want to keep your feet firmly on the ground.

You take off with a limited amount of butane and ballast, and your aim is to fly round a cir-

cuit avoiding hazards on the way. These range from nasty little boys with slingshots, updraughts and downdraughts, thunderstorms, the local Flying School for the Shortsighted, and even incontinent pigeons!

The graphics are among the best I've ever seen, and the five levels of difficulty will provide a long-lasting challenge.

	<b>J.P.</b>	
instructions		80%
playability		85%
graphics		95%
value for money		85%



# ANIROG SOFTWARE

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An E-XPANDED screen, large graphics, rolling barrels, hammer, fireballs, lifts, handbags and umbrellas as you try to rescue the damsel Kong has abducted. Spectacular collapse of Kong's lair in the fourth screen. Uses all 21K of your expanded Vic for this 100% M/C thriller. Complete with high score table.

KB/JS VIC 20 16K £7.90

## MINI-KONG

For UNEXP from the writer of Krazy Kong comes the equally brilliant Mini-Kong. You will wonder how he managed to cram so much in the unexpanded VIC. Brilliant multi-colour graphics, expanded screen, lift, rolling barrels, ladders, running score/Hi-score and not to forget the hand bag bonus in this all M/C presentation.

K.B./J.S. VIC 20 UNEXP £5.95

## XENO II

An E-XPANDED-D screen presentation with superb action-packed space thriller, written entirely in machine code with four action-packed stages. To destroy the power source of Xeno II you have to fight off waves of robot attack, plasma bombing by the legions of the outer sanctum and finally attack the power source protected by a force field, continuous bombardment by guardians and blockading by wild whirling suicidal space ships. Truly a game for all arcadians.

JS VIC 20 16K £7.90

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K.B. VIC 20 16K £5.95

## FROGRUN

Popular arcade game. All machine code with brilliant colour graphics and sound effect. Features include snakes, crocodiles, lady frogs, turtles, cars, lorries and logs.

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HCW 19



# Give your VIC lots more character

There are few items of software available for the VIC-20 that do not use custom designed characters in some way. Most home computers have the ability to display user defined characters but the VIC seems to have better facilities than most.

In short, the VIC enables you to redesign a full set of 256 characters. In fact, by switching between the ROM sets, a 256 full set and a 128 half set, you have access to a grand total of 640 characters (and that's enough for anybody).

The one big nuisance with user defined characters is the designing/entering stage of the characters. To the uninitiated, this process involves:

- A Design the character on some kind of eight by eight grid.
- B Calculate the data value corresponding to each line of the character.
- C Enter the data values into the right portion of RAM in the VIC.

In all, this job is soul destroying, tedious and unnecessary. The logical approach is to use a program to perform all the work. A number of software houses have accepted this fact, and a number of character designing routines are available, at a price.

I have used a number of commercially available programs and came to the conclusion that none provided an adequate environment for the design of large numbers of new characters.

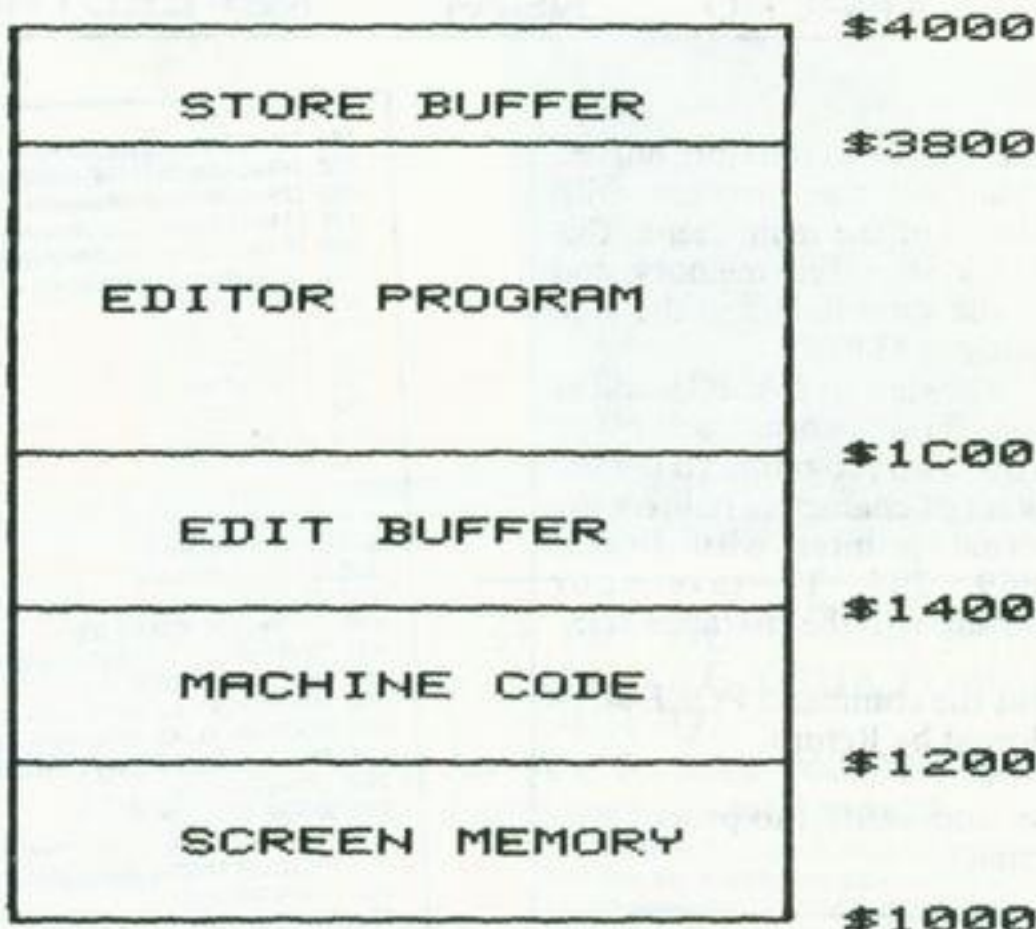
In this light, I have developed a routine which provides all the necessary facilities. This article describes the routine and give instructions for its use.

First I will give the basic design criteria I specified for the routine.

- 1 The routine must enable the user to create 256 new characters at one sitting without recourse to unwieldy use of tape storage.
- 2 All data manipulation should be fast with use of machine code as required.
- 3 The program should allow you to create 'macros' consisting of up to 25 characters.
- 4 The editor should offer as many facilities as possible but remain uncomplicated.

## Take the tedium out of redesigning characters. Allen Webb's program for the VIC-20 does the work for you

Figure 1 — memory map



5 There should be facilities for the saving and loading of character files on tape and the down-loading of the character block to the correct RAM area.

In view of these requirements, it soon became clear that a memory expansion of at least 8K was necessary. The operational foibles of the 6560 chip are such that any new characters must reside at specified locations between \$1000 and \$1E00. As a consequence the bottom of BASIC must be raised to accommodate the characters. Figure 1 gives details of the new memory map.

The simplest method of handling the characters was to use two storage buffers. An edit buffer located at between \$1800 and \$1A00 is used to hold the block of 64 characters during the editing process.

A larger storage block residing at \$3800 is used to store the full 256 characters as four blocks. Blocks of 64 characters are then moved from the storage

buffer to the edit buffer for design and then back again for storage.

The first step is to type in the program. Do this as you would any other program but **don't run it yet!** Save the program. Reset the VIC by a SYS 64802.

- Type in the one line program: 10 POKE 44,28: RUN
- Execute the direct command: POKE 642,28: SYS64824
- Load the character editor. Type in POKE44,18 followed by Return.
- SAVE the program as normal.

You now have a relocated routine as described in Figure 1. I suggest that you make at least three verified copies of the routine (accidents can happen!!). You can now run and debug the program.

Now the hard work is over, we can now get down to using the

program. On running you will see the main menu. You select the options by pressing the corresponding number.

Option 1 enters the edit mode and gives you a screen similar to Figure 2.

The display is rather crowded so I'll give a quick run down on the items. The top three lines show the 64 characters in the edit buffer. The character being edited is printed in cyan to distinguish it from the rest. The edit window is the 8x8 grid in which the character is designed. The macro window is used for building up complex forms out of several characters.

The column of numbers between the windows are the data values for use in data statements, if required. The command line is used for input prompts. The bottom two lines summarise the commands available in this mode.

On entering edit mode the first character is selected for editing. This character is drawn in the edit window and the corresponding data values shown. A chequered edit cursor is printed in the top left corner of the window. This cursor is printed in the top left corner of the window. This cursor can be moved with the normal cursor controls (ie up, down, left, right & home). Pressing return will send the cursor to the extreme left of the next line down. CLR will clear the edit window. Pressing \* will set the point under the cursor and SPACE will clear the point. The data values and the character in the top three lines will change as you edit the character.

Two commands enable you to change the orientation of the character: I will invert the character. R will reverse or reflect the character.

Once you have finished with the character you can move on to another by one of two commands: N will move on to the next character. G will goto any specified character.

You can copy any character by pressing 'C'.

You enter macro mode by pressing M. You will then be asked if you wish to clear the window. You can specify the size of the macro up to a size of 5x5.

A cursor will appear and you will be asked to enter the characters to be used in the macro. The character currently under the cursor will be given as a default value to help prevent unnecessary typing.

# VIC-20 PROGRAMMING

Press E to leave edit mode and return to the main menu. I realize that the number of editing commands is large, but after a short time you will get the hang of it.

The second option on the main menu relates to the movement of data. On pressing 2, you will see a second menu. Options 1 and 2 allow you to move character blocks from the store buffer to the edit buffer and vice versa. Option 3 allows you to download any of the blocks of characters in the ROM to the edit buffer. Option 4 will fill the edit buffer with blanks. You can abort any of the data movement commands by pressing \*.

Option 3 on the main menu will kill the program and restore your rull memory. The store buffer is down-loaded to the space \$1400 to \$1C00. The start of BASIC at \$1C00 and leave any characters below it intact.

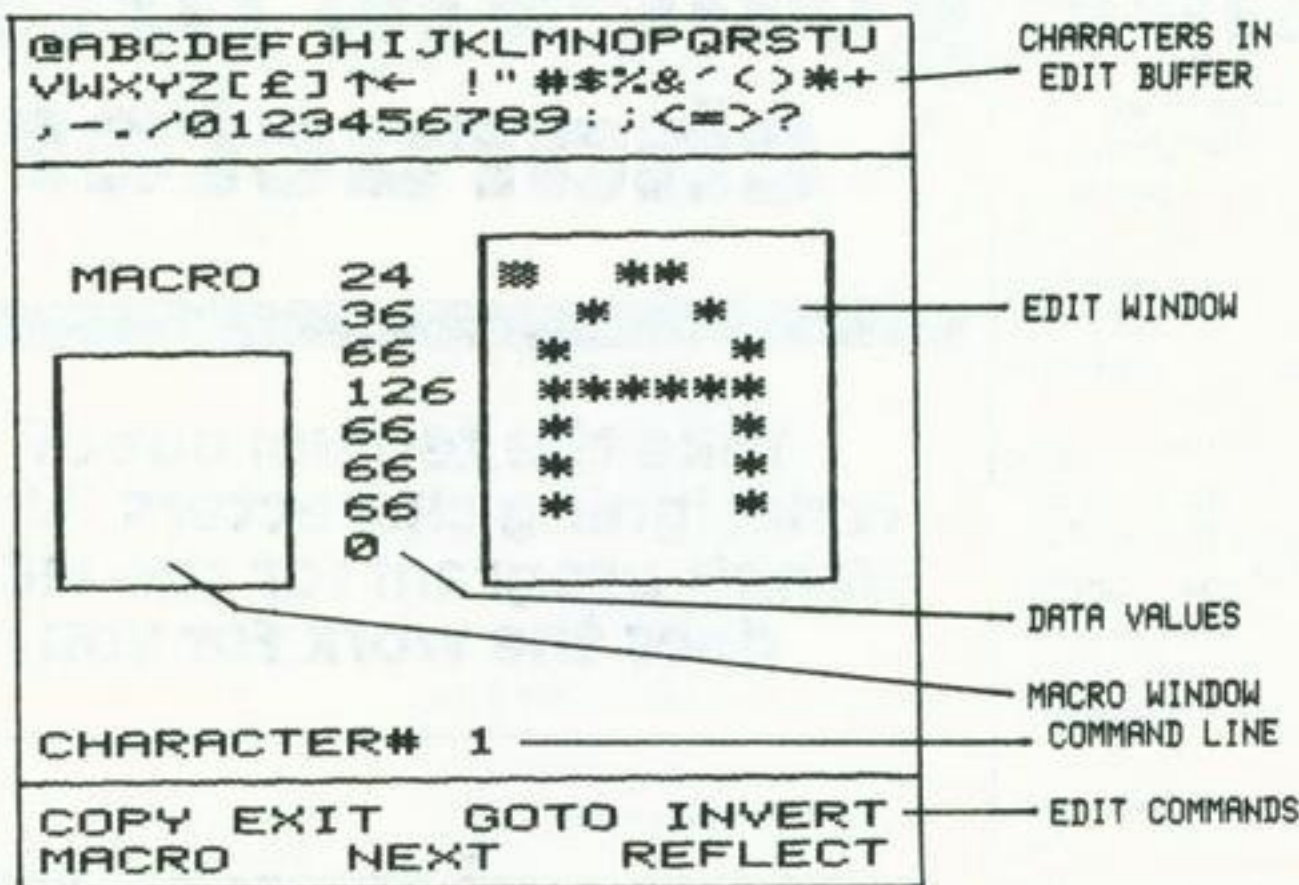
Options 4 and 5 enable you to save and load the store buffer on tape. This is useful if you plan to spend several sessions designing your character sets.

Option 6 on the main menu will display the contents of the store buffer on screen. Each block of 64 characters will be displayed in a different colour. You should be careful to save the edit buffer in the store buffer before using this option since the edit buffer will be corrupted.

OK, so what do you do when you've designed your character set?

You must ensure before proceeding that all of the

Figure 2 — what the screen looks like



characters are in the store buffer. If you kill the program with option 3 of the main menu, this restores your full memory and puts the store buffer in the area starting at \$1400.

The start of BASIC is still at \$1C00. You can now load or type in your own program. To use the new set of characters redirect the internal pointer with POKE 36869, 205. To save your program with the character set:

Input the command POKE44,18 followed by Return.

Save and verify the program as normal.

```

460 IFA=17ANDY<8THENNY=Y+1:HX=X:GOTO670
470 IFA=145ANDY<1THENNY=Y-1:HX=X:GOTO670
480 IFA=29ANDX<8THENNX=X+1:NY=Y:GOTO670
490 IFA=157ANDX<1THENNX=X-1:NY=Y:GOTO670
500 IF(A=17ORA=145ORA=29ORA=157)THEN670
510 IFA=19THENPOKEFNA(X),LC:X=1:Y=1:GOTO430
520 IFA=147THEN640
530 IFA=42THEN680
540 IFA=32THEN720
550 IFA=78THEN760
560 IFA=67THEN820
570 IFA=69THEN880
580 IFA=77THEN870
590 IFA=71THEN780
600 IF A=13THEN1010
610 IFA=73THEN1040
620 IFA=82THEN1070
630 POKEFNA(X),LC:GOTO430
640 FOR Y=1 TO 8:FOR X=1 TO 8
650 POKEFNA(X),32:NEXT X,Y:FOR Y=1 TO 8:GOSUB1750:NEXT Y:GOSUB1840
660 X=X+1:GOTO430
670 POKEFNA(X),LC:X=NX:Y=NY:GOTO430
680 POKEFNA(X),42:TX=X:TY=Y:GOSUB1750:X=TX:Y=TY
690 PRINTLEFT$(CU$,6+Y);TAB(7);"#####PEEK(6144+CN#8+Y-1)"
700 IFX=8THEN430
710 X=X+1:GOTO430
720 POKEFNA(X),32:TX=X:TY=Y:GOSUB1750:X=TX:Y=TY
730 PRINTLEFT$(CU$,6+Y);TAB(7);"#####PEEK(6144+CN#8+Y-1)"
740 IFX=8THEN430
750 X=X+1:GOTO430
760 POKE37888+CN,6:IFCN<63THENCN=CN+1
770 GOTO340
780 LI=18:GOSUB1820:INPUT"GO TO CHARACTER#";C9:C9=VAL(C9#)
790 IFC9>63ORC9<8THEN780
800 POKE37888+CN,6:CN=C9
810 POKE37888+CN,6:GOTO340
820 LI=18:GOSUB1820:INPUT"COPY CHARACTER#";CC:CC=VAL(CC#)
830 IFC9>63ORCC<8THEN820
840 FOR I=0 TO 7
850 POKE(6144+CN#8+I),PEEK(6144+CC#8+I)
860 NEXT I:GOTO340
870 LI=18:GOSUB1820:INPUT"CLEAR MACRO AREA";IN:IFIN#="N"THEN900
880 IFIN#="C" THEN900
890 FOR Y=1 TO 14:FOR X=1 TO 5:POKEFNB(X),32:NEXT X,Y
900 LI=18:GOSUB1820:INPUT"HEIGHT OF MACRO";HI:HI=VAL(HI#):IFHI>50RHI<8THEN870
910 LI=18:GOSUB1820:INPUT"WIDTH OF MACRO";WI:WI=VAL(WI#):IFWI>50RWI<8THEN910
920 POKEFNB(X),LC:TX=X:TY=Y
930 FOR Y=1 TO 5+HI:FOR X=1 TO WI
940 CA=PEEK(FNB(X)):IFCA<127THENCA=CA-128
950 POKEFNB(X),182:POKEFNB(X)+OF,6
960 LI=18:GOSUB1820:PRINT"CHARACTER#";CA
970 INPUT"#####";C1:C1=VAL(C1#)
980 IFC1>63ORC1<8THEN970
990 POKEFNB(X),C1+128:NEXT X,Y:TX=X:TY=TY
1000 LI=18:GOSUB1820:PRINT"EDITING CHARACTER#";CN:POKE37888+CN,3:GOTO430
1010 POKEFNA(X),LC
1020 IFY<8THENY=Y+1
1030 X=1:GOTO430
1040 FOR I=0 TO 7:NO(I)=PEEK(6144+CN#8+I):NEXT I
1050 FOR I=0 TO 7:POKE(6144+CN#8+I),NO(I):NEXT I
1060 GOTO340
1070 FOR J=0 TO 7:NO=PEEK(6144+CN#8+J):FOR I=0 TO 7
1080 A(I)=ABS((NO AND 2<I>>8):NEXT I
1090 NO=8:FOR I=0 TO 7
1100 NO=NO+(7-I)*2<I>:NEXT I
1110 POKE(6144+CN#8+J),NO:NEXT J
1120 GOTO340
1130 POKE36869,192
1140 PRINT"CHOOSE DIRECTION OF DATA TRANSFER"
1150 PRINT"##### STORE TO EDIT BLOCK"
1160 PRINT"##### EDIT BLOCK TO STORE"
1170 PRINT"##### ROM TO EDIT BLOCK"
1180 PRINT"##### CLEAR EDIT BLOCK"
1190 GETI$:IFI#="" THEN1190
1200 I=VAL(I$):IFI<=8ORI>4 THEN1190
1210 IFI=3 THEN1290
    
```

```

10 REM CHAR EDIT A E WEBB 1983
20 PRINT"J":CU$="#####"
30 OF=33792:FOR I=4864 TO 4895:READX:POKEI,X:NEXT
40 POKE89,8:POKE90,128:POKE91,8:POKE92,20:POKE4865,4:SYS4864
50 TM=PEEK(56):POKE56,56:POKE650,128
60 DEFFNB(X)=4239+(Y-1)*22+X
70 DEFFNA(X)=4896+(Y-1)*22+X
80 PRINT" CHARACTER EDITOR":POKE36869,192
90 PRINT"##### EDIT CHARACTERS"
100 PRINT"##### MOVE DATA"
110 PRINT"##### KILL PROGRAM WITH"
120 PRINT"##### SAVE CHARACTERS"
130 PRINT"##### LOAD CHARACTERS"
140 PRINT"##### DISPLAY STORE"
150 PRINT"##### SELECT OPTION"
160 GETI$:IFI#="" THEN170
170 I=VAL(I$):IF I<=8ORI>6 THEN160
180 ON I GOTO 190,1130,1530,1550,1590,1620
190 PRINT"J":POKE36869,205:CN=8
200 FOR I=128 TO 191
210 POKE3968+I,I:POKE37768+I,6
220 NEXT I
230 PRINT"#####"
240 PRINTTAB(11)"#####"
250 FOR I=1 TO 8
260 PRINTTAB(11)"I"
270 NEXT I
280 PRINTTAB(11)"#####"
290 PRINT"##### MACRO ":PRINT"#####"
300 FOR I=1 TO 5:PRINT" I":NEXT I
310 PRINT"#####"
320 LI=18:GOSUB1820:PRINT"#####"
330 PRINT"##### COPY ##### GOTO ##### INVERT ##### MACRO ##### NEXT ##### REFLECT"
340 FOR I=0 TO 7
350 CV=PEEK(6144+CN#8+I)
360 Y=I+6:FOR J=7 TO 8 STEP-1
370 X=19-J
380 OS="" :IF(CV AND 2<J>>8) THEN OS=""
390 GOSUB1740:PRINTOS
400 NEXT J:NEXT I:GOSUB1840
410 LI=18:GOSUB1820:PRINT"EDITING CHARACTER#";CN:POKE37888+CN,3
420 X=1:Y=1
430 LC=PEEK(FNB(X)):POKEFNB(X),182
440 GETA$:IFA#="" THEN440
450 A=ASC(A$)
    
```

# VIC-20 PROGRAMMING

```

1220 IFI=4THEN1478
1230 PRINT" WHICH BLOCK IS BEING MOVED 1-4?"
1240 PRINT"    PRESS * TO ABORT"
1250 GETI$:IFI$=""THEN1258
1260 IFI$="*"THEN880
1270 BN=VAL(I$):IFBN<=8ORBN>4THEN1258
1280 GOTO1410
1290 PRINT" WHICH BLOCK IS BEING MOVED 1-8?"
1300 PRINT"    PRESS * TO ABORT"
1310 PRINT"NOTE..."
1320 PRINT"YOU CAN ACCESS ALL 512CHARACTERS IN THE ROM:"
1330 PRINT"BLOCK      TYPE      NORMAL"
1340 PRINT" 1-2      UPPER CASE  REVERSED FIELD"
1350 PRINT" 3-4      UPPER CASE  NORMAL"
1360 PRINT" 5-6      LOWER CASE  REVERSE FIELD"
1370 PRINT" 7-8      LOWER CASE
1380 GETI$:IFI$=""THEN1388
1390 IFI$="*"THEN880
1400 BN=VAL(I$):IFBN<=8ORBN>8THEN1388
1410 ONIGOTO1420,1430,1440
1420 SA=14336+(BN-1)*512:FA=6144:GOTO1450
1430 SA=14336+(BN-1)*512:SA=6144:GOTO1450
1440 SA=32768+(BN-1)*512:FA=6144
1450 POKE90,SA/256:POKE89,SA-PEEK(90)*256
1460 POKE92,FA/256:POKE91,FA-PEEK(92)*256:POKE4865,2:SYS4864:GOTO880
1470 PRINT"          CLEARING EDIT BLOCK"
1480 FORI=0TO511:POKE(6144+I),0:NEXT
1490 GOTO880
1500 SA=14336:FA=5120
1510 POKE90,SA/256:POKE89,SA-PEEK(90)*256
1520 POKE92,FA/256:POKE91,FA-PEEK(92)*256:POKE4865,8:SYS4864:RETURN
1530 GOSUB1580
1540 POKE641,0:POKE642,28:POKE644,TM:SYS64824
1550 PRINT" SAVE STORE BLOCK FOR EDITING AT A LATER DATE."
1560 INPUT" FILE NAME";NA$
1570 S=56:F=64:GOSUB1890
1580 GOTO880
1590 PRINT"NOTE....."
1600 PRINT" THE NEXT FILE ON THE TAPE WILL BE LOADED."
1610 LOAD",1,1:CLR:RUN
1620 PRINT" :POKE36869,205
1630 SA=14336:FA=5120
1640 POKE90,SA/256:POKE89,SA-PEEK(90)*256
1650 POKE92,FA/256:POKE91,FA-PEEK(92)*256:POKE4865,8:SYS4864
1660 CH=0:LO=4096:CL=37888:CO=3:GOSUB1720
1670 CH=64:LO=4142:CL=37934:CO=8:GOSUB1720
1680 CH=128:LO=4188:CL=37980:CO=6:GOSUB1720
1690 CH=192:LO=4236:CL=38026:CO=2:GOSUB1720
1700 GETI$:IFI$=""THEN1708
1710 GOTO48

```

```

1720 FORI=CHTOCH+63
1730 POKELO+I,I:POKECL+I,CO:NEXT:RETURN
1740 POKE701,Y:POKE702,X:POKE703,0:SYS63520:RETURN
1750 BY=0:FORX=1TO8
1760 BI=0:IFPEEK(FNR(X))<>32THENBI=1
1770 IFBI=0THEN1790
1780 BY=BY+2*(8-X)
1790 NEXT
1800 POKE(6144+CN*8+Y-1),BY
1810 RETURN
1820 POKE701,LI:SYS60045:GOSUB1830:RETURN
1830 POKE701,LI:POKE702,0:POKE703,0:SYS63520:RETURN
1840 PRINT"
1850 FORI=0TO7:PRINTTAB(7)" " :NEXT
1860 PRINT"
1870 FORI=0TO7:PRINTTAB(7)PEEK(6144+CN*8+I):NEXT
1880 RETURN
1890 FL=LEN(NA$)
1900 POKE183,FL
1910 FOR I=1TOFL:POKE673+I,ASC(MID$(NA$,I,1)):NEXT
1920 POKE187,162:POKE188,2
1930 POKE185,1:POKE186,1
1940 POKE193,0:POKE194,S
1950 POKE174,0:POKE175,F
1960 SYS63189:RETURN
1970 DATA162,2,160,0,177,69,145,91,200,200,249
1980 DATA202,240,7,230,90,230,92,76,4,19,96

```

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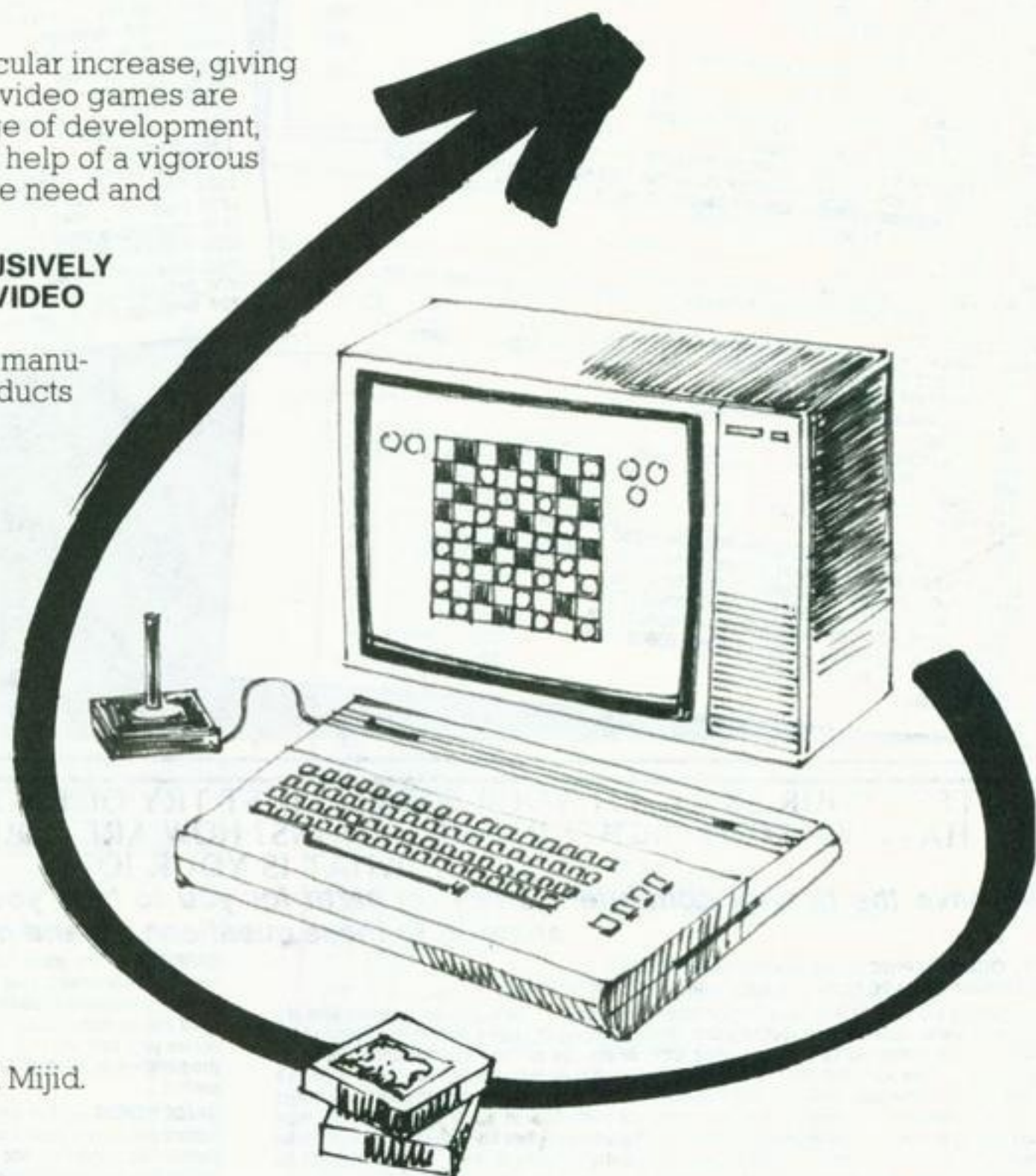
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# Messing about on your micro

Want to tamper with the inner workings of your micro? Perhaps one of these programs might be of service.

## Ace-Atari Cassette Enhancer Atari 400/800 £7.95

RENUMBER, variable DUMP and AUTO line numbering.

Lastly, there is a machine-coder, for those wanting to include machine-code routines in their BASIC. Binary files may be saved and loaded, as well as verified.

All three parts contain useful options, although the machine-coder is perhaps the least useful of the three. Ace loads into 4K if all three parts are selected, and will remain in place until you switch off.

instructions	90%
ease of use	80%
display	n/a
value for money	90%



English Software, 50 Newton St, Piccadilly, Manchester

This piece of autoboot machine code is loaded before you start a BASIC programming session on your machine. It has three distinct parts, each encompassing the previous parts.

Firstly, the enhancer allows CSAVE programs to be named, and gives a VERIFY. Second, there is the utility package, giving

## The Visual Processor £5.95

Gilsoft, 30 Hawthorn Road, Barry, S. Glamorgan CF6 8LE

The idea behind the program is good, but the implementation is weak. The action of an imaginary processor is simulated by a BASIC program, with provision for assembly, disassembly, store modification, and even save and load. Since the maximum length of the simulated program is 32 locations, the latter provision seems unnecessary.

Only sixteen instructions are available, the memonics being LDA, STA, INA, OUT,

ADD, NEG, LSL, LSR, SBC, ADC, ROL, CMP, JMP, JNZ, JNC and HLT. This offers very limited scope for program construction. As a means of teaching a beginner how to handle machine code, it is like using a kiddie-car to train for world championship motor racing.

To make matters worse, there were inconsistencies in the coding. The user, told to use 'end' to return to the main menu, eventually finds that the required input is 'END'.

instructions	D.T.
usability	60%
graphics	50%
value for money	60%
	15%



## Monitor Jupiter Ace £5.95

Jupiter Cantab, Cheshunt Building, Bateman Street, Cambridge CB2 1LZ

A fairly standard utility program featuring the usual machine code facilities, with the useful options of reading the stack and using FORTH words interactively from within the monitor.

A bufferfull of bytes can be poked directly into nominated addresses, but there is no provision for reading the amount of memory left and the monitor will

cheerfully list the contents of non-existent memory addresses — try FFFF!

Hex, octal and decimal bases are available but the main display uses only half the screen and there is no automatic carriage return between successive inputs.

This produces a rather untidy display and provides less information than the Remsoft toolkit with which this monitor will inevitably be compared.

G.M.

instructions	80%
ease of use	70%
display	n/a
value for money	65%



## SYS 64 Spectrum £6.95

Artic, 396 James Reckitt Ave., Hull, N Humberside

For anyone familiar with 64-column displays, the 32-column Spectrum format seems rather cramped. Here is a program to solve that. Load it, and half-width characters are printed on a 64-column basis. Even listings appear at 64 characters per line.

There was one slight snag with loading the tape — to be precise, two. First it was found that the 16K and 48K versions were on each other's sides of the

tape, and then it was found that LOAD "" was more successful than the recommended LOAD "" CODE, as it brought the initialising routine into action.

The actual conversion program lies at the top of store, taking up nearly 2K of RAM (F7A9-FF58 in 48K). It changes the interrupt mode, so that it can poke its nose into the action and perform the necessary conversions.

These appear to be the replacement of normal character shapes by half-width versions that are combined in pairs as single characters to be output.

The process is not without its difficulties. Picking up the interrupt for a fresh screen calls for the addition of PAUSE 1 after each

clear screen command. Command lines at the bottom of the screen appear in small characters at normal spacing.

In general, the system works, though the narrow characters are not always as clear as might be wished. It also works on the printer, providing a PRINT action is called before each LPRINT. The character size can be switched from normal size to half size within a given display, and for new BASIC programs it gives useful added flexibility of presentation.

D.T.

instructions	70%
ease of use	80%
display	n/a
value for money	70%



## We'll teach you how to draw

**Take Peter Shaw's advice and creating drawings will be a lot easier with your Oric. You'll find his sample program has a strangely familiar result**

Although the result of this program has only a novelty value, the way in which it its final aim has other uses.

I'm sure most Oric owners have played around with the graphics commands — oval circles, frantically waving lines, the lot!

Armed with a Print 'n' Plotter jotter — they're not totally exclusive to the Spectrum — I first draw my initial design. One good thing about the Print 'n' Plotter jotters is that they are transparent, so you don't have to be an amazing artist. You can trace the design.

### Hints on conversion

For computers such as the Spectrum just change CURSET to PLOT, and change every DRAW statement to DRAW D1,D2. Owners of other computers which only have absolute draw will have to re-write most of it, I'm afraid.

If you have looked at the listing, you will have noticed that each letter is treated as a single unit. This has two advantages: first, debugging is a lot easier, and secondly when a letter is used

twice it is a lot easier to just edit the block and get all them looking the same rather than re-writing a new m and getting

### Variables

D1 relative draw position (X value)  
D2 relative draw position (Y value)  
A loop to read information into D1 and D2

something which has no resemblance to the first one.

In every unit (with only a few exceptions) there is a REMark, followed by a CURSET command which fixes the position on the screen where you're going to put the letter, and then a loop which reads data in the part immediately following NEXT A.

The information read into D1 and D2 is the X-Y relative draw positions of the next line. There are places were you can cheat a little, ie the e is a circle with a couple of points unplotted.

With this information in mind, you can now type in the program, change it as you wish, and design your own personalised logo.

```
10 REM Home
20 REM Computing
30 REM Weekly
40 REM P. SHAW 1983
50 PAPER 0:INK 4
60 HIRES:INK6
70 CURSET 50,45,1
90 REM H
100 FOR A=1 TO 12
110 READ D1,D2:DRAW D1,D2,1
120 NEXT A
```

```
130 DATA 10,0,0,11,6,0,0,-11,10,0
140 DATA 0,31,-10,0,0,-12,-6,0,0,12
150 DATA -10,0,0,-31
160 CURSET 86,67,0
170 REM o
180 CIRCLE 10,1:CIRCLE 4,1
190 REM M
200 CURSET 96,57,0
210 FOR A=1 TO 28
220 READ D1,D2:DRAW D1,D2,1
230 NEXT A
240 DATA 10,0,0,3,1,0,3,-3,4,0,1,1
250 DATA 1,0,3,3,3,-3,1,0,1,-1
260 DATA 3,0,4,4,0,15,-7,0,0,-13
270 DATA -1,-1,-2,0,-1,1,0,13
280 DATA -9,0,0,-13,-1,-1,-2,0,-1,1
290 DATA 0,13,-10,0,0,-19
300 REM e
310 CURSET 143,67,0
320 CIRCLE 10,1:CURSET 151,69,0:CURSET 151,70,0
330 CURSET 151,68,0
340 FOR A=1 TO 8
350 READ D1,D2:DRAW D1,D2,1
360 NEXT A
370 DATA -12,0,0,1,2,2,1,0,1,1,5,0
380 DATA 1,-1,1,0
390 CURSET 146,64,1
400 FOR A=1 TO 5
410 READ D1,D2:DRAW D1,D2,1
420 NEXT A
430 DATA -7,0,0,-1,2,-2,3,0,2,2
440 REM C
450 CURSET 49,76,1
460 FOR A=1 TO 33
470 READ D1,D2:DRAW D1,D2,1
480 NEXT A
490 DATA -4,-5,-1,0,-1,-1,-1,0,-1,-1
500 DATA -9,0,-1,1,-1,0,-1,1,-1,0
510 DATA -4,5,-3,6,0,10,2,4,3,3,5,3
520 DATA 1,1,9,0,4,-2,2,-2,1,0,1,-1
530 DATA -7,-7,-3,0,-1,1,-6,0,-1,-1
540 DATA -1,-1,0,-6,2,-2,6,0,3,2,7,-7
550 REM o
560 CURSET 60,94,0
580 CIRCLE 10,1:CIRCLE 4,1
590 REM m
600 CURSET 70,84,0
610 FOR A=1 TO 28
620 READ D1,D2:DRAW D1,D2,1
630 NEXT A
640 DATA 10,0,0,3,1,0,3,-3,4,0,1,1
650 DATA 1,0,3,3,3,-3,1,0,1,-1
660 DATA 3,0,4,4,0,15,-7,0,0,-13
670 DATA -1,-1,-2,0,-1,1,0,13
680 DATA -9,0,0,-13,-1,-1,-2,0,-1,1
690 DATA 0,13,-10,0,0,-19
```

# ORIC-1 PROGRAMMING

```
700 REM p
710 CURSET 107,8,1
720 FOR A=1 TO 20
730 READ D1,D2:DRAW D1,D2,1
740 NEXT A
750 DATA 10,0,0,2,1,0,1,-1,2,-1,4,0
760 DATA 1,1,1,0,4,5,1,1,0,6,-1,2
770 DATA -3,3,-1,0,-1,1,-7,0,-2-2
780 DATA 0,8,-10,0,0,-25
790 CURSET 122,94,0:CIRCLE 4,1
800 REM u
810 CURSET 134,84,1
820 FOR A=1 TO 16
830 READ D1,D2:DRAW D1,D2,1
840 NEXT A
850 DATA 8,0,0,13,1,1,2,0,1,-1,0,-13
860 DATA 9,0,0,18,-9,0,0,-2,-1,0
870 DATA -2,2,-4,0,-3,-1,-2,-2,0,-14
880 REM t
890 CURSET 157,84,1
900 FOR A=1 TO 17
910 READ D1,D2:DRAW D1,D2,1
920 NEXT A
930 DATA 10,-10,0,10,4,0,0,4,-4,0
940 DATA 0,8,1,1,1,0,1,-1,1,0,0,5
950 DATA -2,2,-8,0,-3,-5,0,-9,-1,0
960 DATA 0,-4
970 REM i
980 CURSET 173,84,1
990 FOR A=1 TO 4
1000 READ D1,D2:DRAW D1,D2,1
1010 NEXT A
1020 DATA 9,0,0,19,-9,0,0,-19
1030 CURSET 178,88,0:CIRCLE 4,1
1040 REM n
1050 CURSET 184,84,1
1060 FOR A=1 TO 14
1070 READ D1,D2:DRAW D1,D2,1
1080 NEXT A
1090 DATA 9,0,0,2,3,-2,4,0,3,2,1,1
1100 DATA 0,16,-8,0,0,-13,-1,-1,-2,2
1110 DATA 0,12,-9,0,0,-17
1120 REM g
1130 CURSET 214,84,1
1140 FOR A=1 TO 21
1150 READ D1,D2:DRAW D1,D2,1
1160 NEXT A
1170 DATA 15,0,0,18,-1,2,-1,1,-8,4
1180 DATA -9,0,-4,-2
1190 DATA 0,-8,6,4,3,0,4,-3,0,-4
1200 DATA -3,3,-7,0,-3,-3,0,-7,1,-1
1210 DATA 0,-1,3,-3,1,0,5,0
1220 CURSET 215,89,1
1230 FOR A=1 TO 6
1240 READ D1,D2:DRAW D1,D2,1
1250 NEXT A
1260 DATA 4,0,0,4,-5,0,-1,-1,0,-1
1270 DATA 2,-2
1280 REM w
```

```
1290 CURSET 120,106,1
1300 FOR A=1 TO 14
1310 READ D1,D2:DRAW D1,D2,1
1320 NEXT A
1330 DATA 4,0,3,9,3,-9,3,0,3,9,3,-9
1340 DATA 4,0,-5,15,-4,0,-2,-6,-1,0
1350 DATA -1,6,-4,0,-6,-15
1360 REM E
1370 CURSET 144,106,1
1380 FOR A=1 TO 12
1390 READ D1,D2:DRAW D1,D2,1
1400 NEXT A
1410 DATA 10,0,0,3,-7,0,0,3,7,0,0,3
1420 DATA -7,0,0,3,7,0,0,3,-10,0,0,-15
1430 REM E
1440 CURSET 156,106,1
1450 FOR A=1 TO 12
1460 READ D1,D2:DRAW D1,D2,1
1470 NEXT A
1480 DATA 10,0,0,3,-7,0,0,3,7,0,0,3
1490 DATA -7,0,0,3,7,0,0,3,-10,0,0,-15
1500 REM K
1510 CURSET 168,106,1
1520 FOR A=1 TO 20
1530 READ D1,D2:DRAW D1,D2,1
1540 NEXT A
1550 DATA 5,0,0,4,2,0,2,-2,0,-2,5,0
1560 DATA 0,4,-1,2,-2,2,2,0,1,1,1
1570 DATA 0,3,-5,0,0,-2,-3,-2,-1,0
1580 DATA 0,4,-5,0,0,-15
1590 REM L
1600 CURSET 183,106,1
1610 FOR A=1 TO 6
1620 READ D1,D2:DRAW D1,D2,1
1630 NEXT A
1640 DATA 4,0,0,11,5,0,0,4,-9,0,0,-15
1650 REM Y
1660 CURSET 190,106,1
1670 FOR A=1 TO 9
1680 READ D1,D2:DRAW D1,D2,1
1690 NEXT A
1700 DATA 4,0,3,3,, -3,4,0,-4,8,0,7
1710 DATA -5,0,0,-7,-5,-8
1715 GOTO 1800
1720 MUSIC1,RND(1)*3+2,INT(RND(1)*10)+1,
0:PLAY1,0,1,RND(1)*999
1723 FORA=1TO7
1730 INK A
1740 WAIT 10
1750 NEXT A
1760 GOTO 1720
1800 LET X$=" Best for software - ever
y week "
1810 FR A=1 TO 37
1820 CURSET 6+(6*A),150,0
1830 CHAR (ASC(MID$(X$,A,1))),0,1
1840 NEXT A
1845 PRINT:PRINT:PRINT
1850 GOTO 1720
```

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## Psst £5.50

Ultimate, The Green, Ashby de la Zouch, Leics LE6 5JU

Psst is a manoeuvring and shooting game set in the back garden...well, Robbie the robot's back garden!

An exotic flower is growing, guarded by Robbie, but a number of nasty bugs are set on eating Robbie's flower. Each type of bug requires a different type of spray to destroy it.

The flower will bloom if bugs can be kept away from it. When it does, you move on to the

next level, where there are more and different forms of nasties.

Compost bags, fly swatters and watering cans will increase your score if you pick them up.

Graphics are smooth-moving and colourful and the sound effects are tuneful rather than noisy. You can use keyboard or Kempston joysticks.

Definitely an addictive game.

P.F.

instructions	90%
playability	90%
graphics	90%
value for money	90%



## Robon £5.95

Softtek, 329 Croxted Road, London SE24

The blurb with this program tells me that it's closely modelled on Berserk, so at least you know what you're getting.

For the uninitiated, the game is based on a series of mazes, made up with electrified fences. Touch one and...ZAP! You are pursued by a number of Robons, who not only must avoid the fence, but also your Laz-Gun.

If they catch you their touch is deadly. Dodging and weaving is a highly recommended way of increasing your chances, but beware! The Rabok is waiting to

appear if you hang around too long and then...KAPOW! Another life bites the dust. Further mazes follow for the skillful.

Rather superior graphics mark this game out, as does the quality of the sound.

One other feature of note is the facility to change the speed. You may not think it all that important, yet it adds substantially to the value of the game.

D.M.

instructions	95%
playability	95%
graphics	95%
value for money	95%



## Megapede £5.95

Softtek, 329 Croxted Road, London SE24

Based on the caterpillar idea, the Megapede weaves its way towards you through the mushrooms.

At various points, the tension is heightened by the appearance of the deadly Sid the Spider, and Scorpi the scorpion who drops deadly fleas.

The game itself is an all-colour, all-action affair with sound. The graphics are well done but not animated in the strict sense of the word — they

tend to scroll around the screen instead.

The scrolling is, however, so smooth that you have to look hard to realise what's happening. The sound too could be improved, but I suspect that both of these factors are related to cramming the code into the smaller of the two Spectrums. There is a limit to what can be done in 9½K.

D.M.

instructions	90%
playability	90%
graphics	60%
value for money	80%



# Fighting fit with your Spectrum

## Look out... the aliens are on the warpath in these new Spectrum games

## 3D-Combat Zone 48K £5.95

Artic, 396 James Reckitt Ave., Hull, N. Humberside HU8 0JA

Don't consider Lacentra for your holidays this year! The place has been devastated by a hundred years of war and is now a radioactive wasteland. This hasn't stopped Artic from basing this 3D tank battle game there all the same.

You must fight a lone battle against tanks and flying saucers (won't it be boring if outer space really turns out to be a friendly and hospitable place?) Your only weapon is a shell-blast, and once fired, this takes time to reload. As the struggle progresses,

so your foe sets stronger forces against you.

The 3D effect is interestingly used to make objects loom large as you draw near or shrink as you beat a retreat. Long range shooting usually results in your target tantalisingly moving out of the way at the last moment. Likewise you must avoid the fire of the enemy.

I played the game using the keyboard and found no problems with what is a fairly easy paced game, but Sinclair or Kempston joysticks can be used.

D.J.

instructions	75%
playability	65%
graphics	70%
value for money	70%



## Cosmic Debris 48K £4.95

Artic, 396 James Reckitt Ave, Hull, N Humberside HU8 0JA

Goodness knows how but you have managed once again, despite being an ace star-ship commander, to wander into an asteroid belt. To survive there you must blast the asteroids to powder while at the same time fighting off a posse of alien space ships.

Artic describe the two speeds as fast and suicidal, which is a fair description. Very agile

fingers are needed to accumulate a good score. Other features are a choice of one or two player games and a high score record.

Debris is a very fast-moving game and was quite a challenge to play, at first anyway.

D.J.

instructions	75%
playability	65%
graphics	70%
value for money	65%



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"If more programs shared the quality of OMNICALC, then we might see more Spectrums in offices." Home Computing Weekly 3/5/83

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## VIC-20 SOFTWARE REVIEWS

### Catcha Snatcha £5.50

Imagine, Masons Buildings, Exchange St. East, Liverpool  
A disappointing game which could have been interesting, if a bit more time had been spent ironing out the bugs.

As a store detective you must patrol the corridors of your store preventing shoplifters from perpetrating their wicked deeds. Your duties also include returning lost property to the lost property office and disposing of the occasional parcel bomb.

Graphics and animation are good, but a bug causes the player to occasionally leave a trail of

debris behind him. This stops the game and requires reloading to continue.

Another fault is that at six o'clock on the store clock the rush hour starts. Then the shoplifters speed up so much that you can only stand and watch as your score falls and falls until the game is over. When a new game begins you are back in the middle of the rush hour again.

M.B.

instructions	70%
playability	30%
graphics	85%
value for money	40%



### Innovative Cassettes 1-3 £5.95 each

Melbourne House, Glebe Cottage, Station Road, Cheddington, Leighton Buzzard, Beds LU7 7NA

Several games on one cassette sounds like good value for money until you take into account other factors — like quality.

These three games compilations are sadly lacking in this respect. Written in BASIC, they are very slow and lacking in detail. Small children — no older than eight — might enjoy the strange sounds and bright col-

ours, but for anyone older, they're a definite no-no.

All the games on the Innovative Cassettes are available in book form, where they are arranged to teach BASIC programming techniques to beginners to computing while entertaining at the same time. Fair enough.

With this in mind, the book is much better value for money than the cassettes.

M.B.

instructions	60%
playability	20%
graphics	20%
value for money	10%



### Cosmic Fire Birds 8K or 16K £9.95

Solar Software, 51 Meadowcroft, Radcliffe, Manchester M26 8JP

I suspect that Solar must be suffering from a plague of bad tapes since I had no end of trouble getting this program up and running. Solar were most helpful and supplied a second tape in record time. This tape was no better. As a consequence this review is based on only one test session.

This game is a sort of invader cum galaxian cum phoenix game in which you try to repulse hordes of different alien species. There

are four different types of nasties with differing modes of violence and different point values. You have five initial lives with which to slice up as many of the opposition as possible.

The use of colour and graphics were up to a good standard and the aerobatics of the aliens were quite amazing. The game is of progressive difficulty with each level imposing greater amounts of anguish.

A good but slightly overpriced game.

instructions	85%
playability	85%
graphics	85%
value for money	65%



# Playing around with your VIC

Here's a selection of new VIC releases, rated for you by our review panel

### Cyclons 8K or 16K £9.95

Rabbit Software, 380 Station Road, Harrow, Middlesex

Yippee! An invader game with a new scenario. Excuse the outburst but new ideas are a rarity nowadays.

Consider an asteroids-type arrangement in which you and the aliens float about the screen. You attempt to shoot the aliens by firing in any of the eight standard directions. The opposition will either shoot back or try to ram you.

As you kill an alien, it is replaced with a new one. The

numbers increase as you survive. In the higher levels, nasty homing aliens appear and they are tough to deal with.

You can select one of three options. These are fast start (ie skip the easy bit), bouncing bullets and landscape. The last option draws a range of hills along the bottom of the screen. Colliding with this results in death. You can select any of these options in any combination to give the difficulty of your choice.

instructions	A.W.
playability	65%
graphics	75%
value for money	85%
	80%



### Pakacuda £5.99

Rabbit Software, 380 Station Road, Harrow, Middlesex

This is a rather jolly version of Pacman involving the consumption of lots and lots of fish.

Not only fish, but eel-type things as well. It doesn't tell you in the instructions, but somehow you will probably work out that eating the eels causes the hunters — some unsavoury octopi — to become hunted (ie eaten).

Joystick only, which I think is a bit of a shame. Not that I dislike wagging a joystick, you understood, but keyboard control allows finer movement...

If you are looking for a Pac-

man look-alike, this one is about average. If you really sweat at the thought of fish, look no further.

instructions	45%
playability	70%
graphics	75%
value for money	65%



# Brain trainers for your ZX micro

Practice makes perfect in learning any subject and if practice is what you need, a micro is the ideal way to get it. It never gets tired or bored or loses its temper, and it's fun to use as well.

My first program is designed to ask questions on any subject or topic. At the moment it's set up for general knowledge, but you can change the questions simply by changing lines 200 to 780.

The format is easy: the first line asks the questions, the second stores the correct answer in QS, and the third line RETURNS to the main loop.

I've written the program to choose 10 random questions from a possible 20, ensuring that there is no repetition per run.

## How it works

50-93 asks which type of sum is required, difficulty level and speed (length of time for answering). These are stored in WS, A and D respectively.

97-110 set variables according to levels inputted. X and Y become limits for random numbers.

120 sets up loop J to give 10 questions.

130-140 get two random numbers (A and B) to limits of X and Y.

150-170 check for valid sums, depending on type, to give positive integer answers.

180 puts sum into a string (SS).

200-210 print the sum.

220-290 empty AS, set up loop I to time specified by input D. get input by INKEYS (stored in GS). If key D is pressed, then delete last character (number) entered. Spectrum version should also include OR GS="d" THEN... Checks valid key, if OK adds it to AS and prints it.

300 stores the value of the correct answer as a string in QS ready for checking.

310 calls checking subroutine.

320 goes back for next sum if less than 10.

330 calls end routine, but at 3500 first to modify display.

9500- print additional information before jumping to standard routine at 9110.

```

197 REM * QUESTIONS/ANSWERS *
198 REM *****
200 PRINT "WHAT IS THE CAPITAL
OF ENGLAND ?"
210 LET Q$="LONDON"
220 RETURN
230 PRINT "IN WHICH COUNTY IS B
RISTOL ?"
240 LET Q$="AVON"
250 RETURN
260 PRINT "NAME THE RIVER WHICH
FLOWS THROUGH LONDON"
270 LET Q$="THAMES"
280 RETURN
290 PRINT "WHEN WAS THE BATTLE
OF HASTINGS?"
300 LET Q$="1066"
310 RETURN
320 PRINT "WHICH TREE PRODUCES
ACORNS ?"
330 LET Q$="DAK"
340 RETURN
350 PRINT "WHAT IS THE STREET I
N WHICH THE PRIME MINISTER LIVES
?"
360 LET Q$="DOWNING"
370 RETURN
380 PRINT "HOW MANY IS A DOZEN
?"
390 LET Q$="12"
400 RETURN
410 PRINT "WHAT COUNTRY IS AMST
ERDAM THE CAPITAL OF ?"
420 LET Q$="HOLLAND"
430 RETURN
440 PRINT "WHAT IS THE CAPITAL
OF FRANCE ?"
450 LET Q$="PARIS"
460 RETURN
470 PRINT "NAME THE FAMOUS BRIT
ISH PLANE OF THE BATTLE OF BRITAI
N"
480 LET Q$="SPITFIRE"
490 RETURN
500 PRINT "WHO IS REMEMBERED ON
NOVEMBER 5"
510 LET Q$="GUY FAWKES"
520 RETURN
530 PRINT "WHICH SPORT IS ASSOC
IATED WITH WALES ?"
540 LET Q$="RUGBY"
550 RETURN
560 PRINT "WHICH BIRD IS ASSOCI
ATED WITH SPRINGTIME ?"
570 LET Q$="CUCKOO"
580 RETURN
590 PRINT "HOW MANY IS A SCORE
?"
600 LET Q$="20"
610 RETURN
620 PRINT "WHERE IS MOUNT SNOWD
ON FOUND ?"
630 LET Q$="WALES"
640 RETURN
650 PRINT "HOW MANY IS A GROSS
?"

```

**Whether you teach others or teach yourself, you'll want to use Ray Elder's programs for the ZX81 and Spectrum. Type them in to test general knowledge — and sharpen up mental arithmetic**

My second program gives drill-type practice on the four rules of number.

## How it works

50 sets up CS to 20 spaces

60-90 clear screen, select a random number, check it has not been asked before (line 80), and set CS to X as a flag that the question has been used.

100 sets the PRINT position

110 gosubs for question

120 gets answer in AS

130 gosubs checking routine

140 checks for 10 questions asked. If not, go round again

150 gosubs for end routine

```

550 LET Q$="144"
570 RETURN
580 PRINT "HOW MANY WIVES DID
KING HENRY VIII HAVE
?"
590 LET Q$="6"
700 RETURN
710 PRINT "WHO LED THE ROUNDHEA
DS ?"
720 LET Q$="OLIVER CROMWELL"
730 RETURN
740 PRINT "WHAT DOES H.M.S.O. S
TAND FOR ?"
750 LET Q$="HER MAJESTIES STATI
ONARY OFFICE"
760 RETURN
770 PRINT "WHO GOT THE TEN COMM
ANDMENTS ?"
780 LET Q$="MOSES"
790 RETURN

```

```

50 DIM C$(20)
60 CLS
70 LET R=INT (RND*20+1)
80 IF C$(R)="X" THEN GOTO 70
90 LET C$(R)="X"
100 PRINT AT 5,0;
110 GOSUB 170+R*30
120 INPUT A$
130 GOSUB 9000
140 IF G<10 THEN GOTO 60
150 GOSUB 9100
160 GOTO 50
196 REM *****

```



## ZX PROGRAMS

```

10 LET G=0
20 LET S=0
30 PRINT AT 5,4;"PLEASE ENTER
YOUR NAME";TAB 6;"AND PRESS NEW
LINE."
40 INPUT N$
50 PRINT AT 9,0;"DO YOU WANT A
DD, SUBTRACT, TIMES OR DIVIDE ? (
PRESS + - * OR /)"
60 INPUT W$
70 PRINT AT 12,0;"ENTER LEVEL
OF DIFFICULTY 1 TO 5 ( 5 IS
THE HARDEST )"
80 INPUT A
85 IF A<1 OR A>5 THEN GOTO 80
90 PRINT AT 14,0;"ENTER SPEED
1 TO 5 (5=SLOWEST)"
93 INPUT D
95 IF D<1 OR D>5 THEN GOTO 93
97 LET D=D*10
100 LET X=9+(90 AND A>1)+(900 AND
AND A=6)
110 LET Y=9+(90 AND A>2 AND A<
4)+(900 AND A=6)
117 REM *****
118 REM * MAIN LOOP *
119 REM *****
120 FOR J=1 TO 10
130 LET B=INT (RND*X+1)
140 LET C=INT (RND*Y+1)
150 IF W$="-" AND B<C THEN LET
B=B+C
160 IF W$="/" AND B<C THEN LET
B=B*C
170 IF W$="/" THEN LET B=INT (B
/C)*C
180 LET S$=STR$ B+W$+STR$ C
190 CLS
200 PRINT AT 2,5;"SUM ";J

```

```

210 PRINT AT 5,13;S$;"="
220 LET A$=""
230 FOR I=1 TO D*2
240 LET G$=INKEY$
250 IF G$="D" THEN LET A$=A$( T
O LEN A$-(LEN A$>0))
260 IF G$<"0" OR G$>"9" THEN GO
TO 280
270 LET A$=A$+G$
280 PRINT AT 5,14+LEN S$;A$;" "
290 NEXT I
300 LET Q$=STR$ VAL S$
310 GOSUB 9000
320 NEXT J
330 GOSUB 9500
340 GOTO 120
350 REM
9500 CLS
9510 PRINT TAB 10;"MATHSPEED"
9520 PRINT "TYPE=";W$;"LEVEL=";A
9530 PRINT "SPEED=";D/10
9540 GOTO 9110

```



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HCW19

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**Top Ten programs for the Dragon-32**

1	The King	Microdeal (1)
2	Talking Android Attack	Microdeal (-)
3	Nightflite	Salamander (-)
4	Dragon Trek	Wintersoft (-)
5	Space Wars	Microdeal (3)
6	Graphics System	Salamander (-)
7	Katerpillar Attack	Microdeal (6)
8	Chess	Dragon (7)
9	Mined Out	Quicksilva (-)
10	Typing Tutor	Dragon (-)

Compiled by Boots. Figures in brackets are last week's positions

**Top Ten programs for the ZX81**

1	Flight Simulation	Psion
2	Football Manager	Addictive
3	Fantasy Games	Sinclair
4	1K Games	Sinclair
5	Defender	Quicksilva
6	Chess	Sinclair
7	Asteroids	Quicksilva
8	Scramble	Quicksilva
9	Space Raiders	Sinclair
10	Ship of Doom	Sinclair

Compiled by Boots. Figures in brackets are last week's positions

**Top Ten programs for the VIC-20**

1	Arcadia	Imagine (2)
2	Wacky Waiters	Imagine (4)
3	Catcha Snatcha	Imagine (5)
4	Asteroids	Bug Byte (7)
5	Panic	Bug Byte (1)
6	Cosmiads	Bug Byte (3)
7	Kaktus	Audiogenic (-)
8	Hoppitt	Commodore (-)
9	Mangrove	Audiogenic (-)
10	Amok	Audiogenic (6)

Compiled by Boots. Figures in brackets are last week's positions

**Top Twenty programs for the Spectrum**

1	Penetrator	Melbourne House (1)
2	Flight Simulation	Psion (2)
3	Jet Pac	Ultimate (3)
4	Transylvanian Tower	Richard Shepherd (4)
5	The Hobbit	Psion/M. House (5)
6	3D Tanx	dk'tronics (6)
7	Ah Diddums	Imagine (7)
8	Horace Goes Skiing	Psion/M. House (7)
9	Hungry Horace	Psion/M. House (9)
10	Chess	Psion (10)
11	Planetoids	Psion (11)
12	Test Match	Computer Rentals (12)
13	3D Tunnel	New Generation (13)
14	Ground Attack	Silversoft (14)
15	Time Gate	Quicksilva (15)
16	Orbiter	Silversoft (16)
17	Arcadia	Imagine (17)
18	Starship Enterprise	Silversoft (18)
19	Horace and the Spiders	Psion/M. House (-)
20	Pssst	Ultimate (20)

Compiled by W. H. Smith. Figures in brackets are last week's positions

# Whiz Kids show to go ahead

A few weeks ago I mentioned that a pilot film had been produced, called *Whiz Kids*, which was to be the possible forerunner of a TV series of the same name.

Well, it turns out that CBS (a major American commercial network) is planning to make a series out of the idea, regardless of how well the pilot show does. This is very unusual, as networks typically wait for the poll results before committing themselves to such a financial burden.

Apparently preliminary testing has resulted in a favourable response to the pilot, and anyway CBS want to be the first network out with an action show in which the personal computer features heavily.

As I also mentioned in the previous column, the show will feature kids fighting crime with the use of computers, and will show technology (according to the producer) realistically but slightly ahead of state of the art.

That will be interesting all in itself. With giant strides being made so rapidly, slightly ahead when the series is shot may be slightly behind when it is finally shown. I shall let you know how it all turns out come September.

Coleco, the American video game company, stole the show at the recent Summer Consumer Electronics Show in Chicago. Their new home computer, the Adam, includes 80K of RAM, tape drive, a word processor in ROM, and a letter quality printer, all for under \$600!

As anticipated, the computer is designed to be an extension of the already available Coleco video game player, and all software and games are compatible between game player and computer. Present owners of the game player can update for about \$400.

The Adam uses a Z80 which addresses 64K, and a TI device that is designed to drive the 16K RAM devoted to screen graphics. The printer and the keyboard each have their own processor chips too.

Rather than go head to head with other small computers, Coleco has concentrated more on the software end. Contrasting with other computers of similar price which come up in BASIC, when a user powers up the Adam, the resident word processor called Smart Writer comes up.

This program allows a 78 column display, and functions very closely resembling those available on a conventional typewriter.

A 64K expansion module is also planned. The company says this will allow versions of, say *Donkey Kong*, with more features than the arcade version with excellent graphics.

Adam will get plenty of software from a type of cassette called digital data packs. This looks like a conventional cassette machine, but stores data digitally rather than by analog methods. According to Coleco, this allows for a data transfer rate rivalling the floppy disc. Each pack could store as much as 500K, which translates to about 250 text pages.

Interestingly enough, the Adam will come with a version of BASIC on data pack that will be source compatible with Applesoft. Since more Apples are used in schools than any other single brand of computer here, Coleco's thoughts run along the lines that Johnny and Mary can write programs at school on the Apple, and bring them home to run on the Coleco. Sort of like getting a less than half price Apple.

Regarding the letter quality printer, it uses a standard daisy wheel, and will be able to print up to 80 columns. Coleco is claiming 120 words per minute throughput.

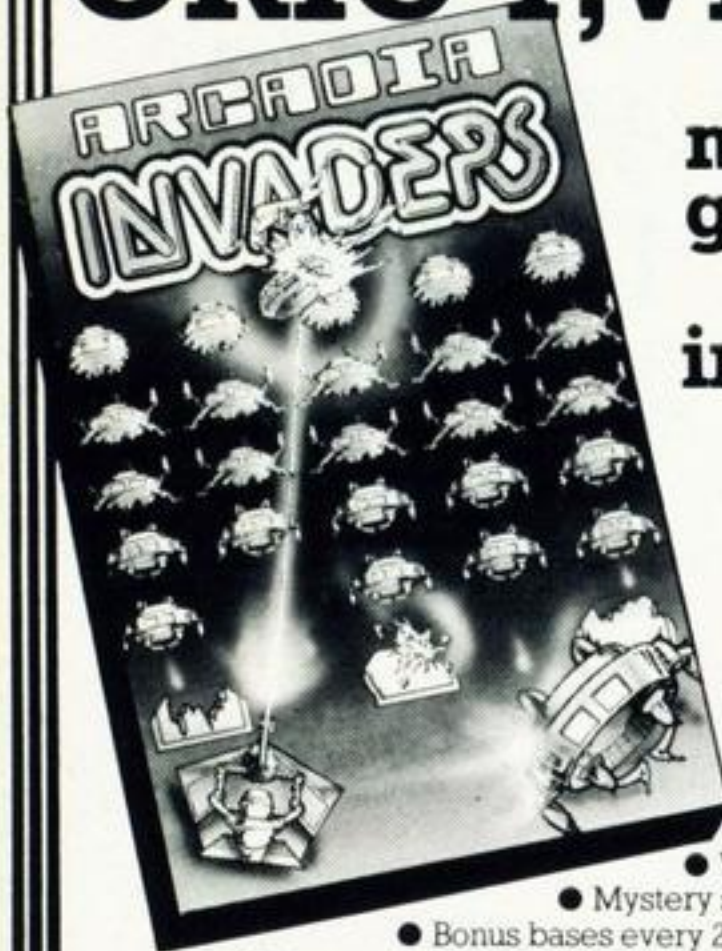
Even with all the hoopla at its so-called debut, company officials did not deny that the exact specs for the machine were still not firm, and that they will be unable to meet demand for some time to come. Still, the machine sounds like it will be capable of doing many things very well for such a low price. I shall look forward to seeing an actual unit.

That's all for this week. See you next time.

**Bud Izen**

**Fairfield, California**

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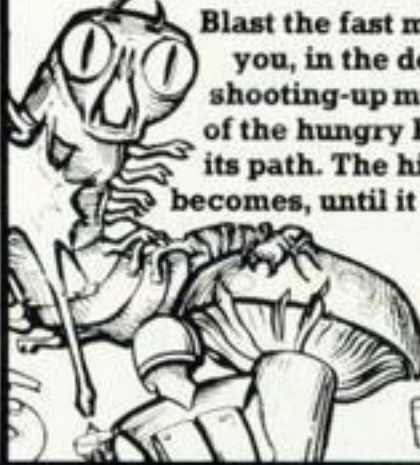
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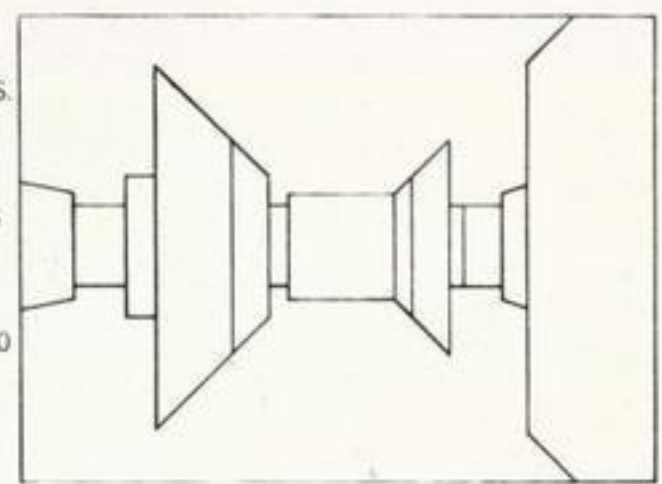
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### Activate Neutralise

The gremlins seem to have got at my Atari program, published on p 25 of HCW 15, and taken away line 5020. The missing line is as follows:

```
5020 FOR A=15 TO 0 STEP
-1:SOUND 0,75,10,A:
FOR E=1 TO 5:NEXT E:
SOUND 0,0,0,0:NEXT A
:GOTO 1000
```

David Ryan, Bannbridge, N. Ireland

### TI's software shortage

I am writing to congratulate you on the TI-99/4A program published in your March 29-April 4 edition, entitled "Playing around with pixels". I would like you to extend my admiration to the compiler, David Gray.

The expertise, extended conception and imaginative projection shown in the construction of this program are, in my opinion, trulay outstanding. Indeed, my grandchildren use it as a construction game, although I have noticed the elder one (aged 9) making semi-secretive notes to the hexadecimal codes of her favourite creations. For future reference, I presume.

Now my plea. As you may well know, there is a desperate shortage of cassette software for the TL. Many of the few cassettes offered are repros from Vince Apps book "35 programs for....." and with all due respect to Mr Apps, who knows his stuff, the programs in this book are for the struggling novice to insert himself, and therefore more than a little on the simple side.

The TI is being promoted on TV and in the High Street shops at present, and this, coupled with

price reduction and cutting plus the £50 value free offer, is bound to increase the number of TI owners, many, like myself, incapable of originating really first class progs.

There are cartridges of course, but these are too expensive for us low budget enthusiasts to buy and in any case, I feel sure that some of us would welcome progs more mind challenging than Space Invaders or Mazes.

So....please.... could not the talents of the writer of the Pixel prog., or any others with similar capabilities, let us have some interesting stuff for the TI-99/4, this nice little machine that has been so dreadfully neglected by the cassette software producers.

John Woods, Halifax, West Yorks

*HCW has now started to publish reviews of some TI software, which we hope will be of use to IT owners.*

### A satisfied customer...

Ever since your first edition people have been writing in to complain about ordering software and hardware by mail order and receiving poor goods and poor service.

Another issue that was discussed in early editions was the forthcoming shakeout in the software market, with predictions that a lot of small firms are going to find it hard and go out of business.

As you may or may not know, nearly all small firms are mail order only operations. All these complaints make the business look untidy and disorganised — this is very damaging, and can scare potential customers away.

I have only seen about two letters of praise for computer firms in your magazine, and the same applies to other magazines — too much complaining and not enough praise.

I have had great service from all mail order firms I have dealt with. I have never had to wait longer than a week for anything I have ordered, and I would particularly like to congratulate Texas Instruments on their service. If you bought a TI-99/4A before 31 January this year you could claim for a £50 rebate. Within two weeks I received a cheque for £50, and I consider this great service.

A. Tanner, Headington, Oxford

### ... But one's not so happy

I recently bought a TI-99/4A and, feeling very proud, sent off for my free offer of the speech synthesizer and games paddles with Basic cartridge and booklet. It was quite a saving on the price for me.

But sad to say, I am still waiting. We did not realise that on some of the computers, the serial numbers have not been stamped in, and the company wouldn't accept the order without a serial number.

After telling Texas Instruments twice and informing the shop. I am still waiting to find out what's happening.

Are the computers really made in Texas? How come only a few slipped through the net?

T. Wilkins, Birmingham

*Kirsty Clift of TI said: "Most of the TI-99/4A for the UK market come not from Texas but from Rieti, Italy, and it was a change in the manufacturing process there that caused the trouble.*

*"The few computers that were sent out without a serial number stamped on did have a sticky label with a date code number, though, and if your computer hasn't got a serial number, the date code number will do just as well for the offer.*

*"We've had some confusion over our free offers, and I'd just like to make it clear that there are two of them. The first is for free games paddles, a games cartridge and a Basic tutor cassette, and is available if you brought a TI-99/4A between May 3 and July 2.*

*"The second is for a free speech synthesiser or a free program recorder, and is available for those who bought six TI plug-in games cartridges between April 30 and July 2."*

### Review it again, T.D.

I'm writing to congratulate T.D. (whoever he may be) on his brilliant write-up of Crazy Climber/Apple Bug in HCW 15. It was witty, informative and very eye-catching.

I only wish more magazines would do it this way. It would make the reviews so much more enjoyable to read.

A. MacDonald, Sudbury, Suffolk

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# Best of British programming?

**English software is flying the flag in the US-dominated Atari software market. Its boss Phillip Morris talked to Candice Goodwin about his plans not just to compete in the market but to lead it**

Considering the number of software companies there are in the UK, it may seem eccentric of Phillip Morris to have called his firm. The English Software Company. But then, you've got to remember that he had the American market in mind.

He said: "Americans are very keen on English people and products. I think it's because of the Royal Family".

English's original logo — a cottage in a rose garden — was designed to have transatlantic appeal. For UK buyers, though, Phillip has dreamed up a more high-tech logo with a video effect. He said: "In this country, cottages are associated with cottage industries — which seems a bit silly since we're in the middle of Manchester".

English is an offshoot of Phillip's shop, Gemini Electronics, and shares the same premises at 50 Newton Street, Piccadilly, Manchester. Gemini sells computer chess games, Atari games machines, Commodore and Atari micros and a range of software.

Gemini itself developed out of an earlier business Phillip had selling computer games machines by mail order — so he's been in the computer games business in one way or another since 1978.

But the idea of selling his own brand of software was sparked off by one of Phillip's customers, Steven Riding. Having bought an Atari micro for Gemini, Steven got interested in machine code programming. The result was Airstrike, a cross between Scramble and Defender.

Steven offered Airstrike to Phillip, who started to sell it by mail order as well as through the shop. But he also had the bright idea of trying to beat the Americans at their own game by selling Airstrike in the US — where the Atari is, of course, a giant seller.

So last summer Phillip's brother Brian set off to seek the company's fortune in sunny California — and that's when the name and logo were originated.

The made-in-England theme extends to Phillip's programming team, which he describes as "the best of British programmers". But finding good programmers has been and continues to be a problem.

The problem is that the Atari uses three separate processors — it has special sound and graphics processors in addition to the main

processing chip. Most home micros only use one all-purpose processor.

So would-be machine code programmers have to understand how the three processors work together, as well as knowing how to make the most of each processor's special abilities.

"You have to learn a lot more about the Atari before you can program it", according to Phillip. "It can take six months to write a program from scratch."

A lot of Phillip's programmers got interested in programming when they bought an Atari from him. He reckons that, although most people initially buy the Atari micro for games, they start programming because of the machine's potential — among other things, it can give you 256 colours on screen at once. But that's not so surprising when you remember that it uses the same chips as the Atari arcade machines.

As well as Airstrike, English Software's range now includes

four more games, on disc as well as cassette, and three utilities. Six more games are scheduled for the end of July, which will be on cartridge as well as cassette.

By the end of the year, Phillip thinks English will be the largest Atari software house in the UK — apart from EMI, that is. He wants to give Atari owners a better deal firstly by informative advertising, with a screen picture and description of every game, and secondly by competitive pricing.

English cassette games cost £15.95 — about a third cheaper than equivalent US products — and in the long term he hopes to bring the price of cartridges down from £30 to around the £20 mark. "Mass production plus new types of chips will mean that cartridges will soon be cheaper to produce", he said.

Phillip also plans to explore the demand for very low-priced games for the Atari later in the year, by offering two or three games for £5 if they are bought

along with a £15 game. But he said he didn't intend to lower his standards.

"Atari owners are very selective in what they buy", he said. "They might buy five games a year, instead of one a week like you would for the Spectrum. But those five games will have lasting appeal." High-quality graphics and an original theme is what he is aiming for in all English's games.

The pick of the English crop will go over to the States to tackle the Atari software market on its home ground. Though the competition over there may be formidable, the potential is enormous, with over half a million Atari machines to cater for.

And when Atari brings out its new machines, which are compatible with the 400 and 800, that potential will increase still further.

Meanwhile, back in the UK, English Software's programs will be appearing on television in the north east this August. Granada TV will be featuring Xenon Raid as the competition game on its Chip-In series.

"The programme is being made in Granada's Liverpool studios", Phillip said, "So we changed the backdrop of Xenon Raid to look like the Liver buildings."

**Pointing the way to new trends in Atari software: from left to right, Steve Riding, John Brierley, and Phillip Morris himself**



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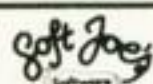
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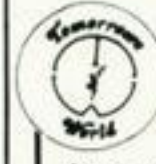
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Don't take my word for it, read what people write about me and my method:-

*I won on Zettlers last weekend. It was not a big sum, but all the same it was a very nice surprise for me.* J.C., Lancs.

*I appreciate the straightforward method you adopt, which is such a contrast to the rubbish of misrepresentation which is so common in the Betting World, by unscrupulous and self-opinionated charlatans.* C.H., Devon

*Winnings cheque received today, sincere thanks.* D.N., Devon

*I congratulate you on your achievement.* R.R., Wales

*I should like to thank you for a most exciting season and look forward to hearing from you again* J.C., Hants.

*I would like to acknowledge cheque and say how much I appreciate your integrity.* J.M., Scotland

*Many thanks for your system, it is all you say and more.* J.C., Lancs.

*Your wonderful system won me £3,527. I intend to visit London soon and will be able to come and see you personally.* (Overseas Client) P.M., Kampala.

*Many thanks for trying so hard to please us all, your brother should be thanked also. One of our daughters, WHOSE HUSBAND YOU HELPED ENORMOUSLY, has just phoned, the four of them have just spent a lovely holiday in Spain.* K.R., Isle of Man.

I do have losing weeks, but ON AVERAGE my winnings show over SIX DIVIDENDS EVERY WEEK for the past 25 years. I know that you are now utterly flabbergasted, it always happens to everyone with whom I come into contact. Please just sit back and imagine for a moment my FIRST DIVIDEND wins alone - they now number 765 (seven hundred and sixty five) and will probably be even more by the time this advertisement appears in print:

I AM NUMBER ONE IN THE WORLD AND NO ONE DISPUTES IT.

For as long as I continue to enter the Football Pools my wins will continue. I have already said, they apply, with equal success to both English and Australian Football Seasons.

I intend to release a STRICTLY LIMITED NUMBER of copies of my cassette, (either for Sinclair ZX81 or Sinclair Spectrum) — DO NOT DELAY AND FIND YOU ARE TOO LATE, in which case I would have to refund your money.

I am so confident of YOUR success that if do not win at least THREE FIRST TREBLE CHANCE DIVIDENDS in the first 20 weeks of entering, I will completely cancel the balance of the purchase price and you do not have to pay me another penny, at any time, no matter how vast your winnings.

I only wish that space would allow me to give you photographs of my winnings slips, cancelled cheques, etc, but it is of course impossible — they now number 8,201 dividends. I have however given JUST A FEW EXTRACTS from ORIGINAL LETTERS I hold from my small Clientele.

I am the Inventor and Sole Proprietor of my method, Registered as EUREKA — ('I have found it'). I am known as The Professor in Pools Circles — I am of the Highest Rank in Forecasting — this is beyond dispute. I am marketing a limited number of Computer Cassettes, under my Registered Company — FOOTBALL ENTERPRISES.

My initial charge for a copy was £75, but for this SPECIAL REDUCED PRICE OFFER I will send you a copy, (for ZX81 or Spectrum) for £20, (twenty pounds) ONLY, plus your Promise to pay me the balance of £55 — ONLY IF YOU WIN AT LEAST THREE FIRST TREBLE CHANCE DIVIDENDS IN YOUR FIRST 20 WEEKS OF ENTERING — otherwise you owe me NOTHING FURTHER.

This is surely proof absolute of my supreme and utter confidence in my own abilities and in the capabilities of my discovery I could easily CHARGE £2,000 per cassette on the evidence I possess, but that would not be fair to everyone, which is what I want to do.

My method is WORLD COPYRIGHT, any infringement and immediate proceedings will be taken, without prior warning. It is truly ingenious and has stood the test of time.

My cassette is simplicity itself to operate and you'll be given FULL DETAILS for weekly calculating. Your entry need not involve you in any large weekly stakes, you can enter for as little as 25p, if you wish.

I charge NO COMMISSION on any of your wins — no matter how BIG they may be.

I realised a long time ago, that it was no good sitting down and dreaming about winning the pools, so I burnt the candle at both ends, working late into the night, occasionally RIGHT THROUGH THE NIGHT, I KNEW there was a way, eventually it all paid off and has been doing so ever since.

I am unable to vary my offer to anyone, so please do not request it, as I shall very easily dispose of the cassettes I have prepared and am making available.

IMMEDIATELY I perfected my method I commenced winning right away, (first with just a little £163, the first week I used it), I HAVE NEVER LOOKED BACK SINCE, amongst all those dividends was one for over EIGHT THOUSAND POUNDS for just one eighth of a penny stake.

I will release a copy on cassette, to you, on receipt of the completed order form and your Signature thereon, confirming you will treat it in the STRICTEST CONFIDENCE between us and retain it for your OWN USE ONLY.

**PLEASE NOTE:**

If you happen to be the proud owner of a Computer, other than a Sinclair ZX81 or Sinclair Spectrum, you can still purchase a copy of my method, for the same price and program @ YOURSELF on to YOUR OWN COMPUTER.

*I sent in my FIRST entry last week and won 2nd and 3rd dividends, as you will see from the enclosed certificate. One more and I would have collected over £400 for FIRST dividend. Once I've won a fair amount I shall be staking from winnings and at 2p per line, A FIRST DIVIDEND last week at this would have been over £3,000.* C.A., Yorks.

I am very interested indeed and enclose £20 herewith. I agree to pay you the balance of £55 ONLY if I win at least THREE FIRST TREBLE CHANCE DIVIDENDS in my first 20 weeks of entering — otherwise I owe you NOTHING FURTHER at any time — no matter how much money I win. My Signature below is my Undertaking to retain complete and absolute confidence about the method.

Name.....  
Address.....  
.....  
Signature..... HCW19

The Managing Director,  
Football Enterprises,  
'Anvon',  
8 New Road,  
Haverfordwest, Pembro.

Please tick if cassette is for:  
Sinclair ZX81 (16K)   
Sinclair Spectrum (48K)   
Any other Computer

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